



Electronic Data Deliverable (EDD)



**Specification Manual
Version 1.1**



U.S. Environmental Protection Agency
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EarthSoft Inc. developed the Electronic Data Processor (EDP) and reviewed the EDD format to assure its technical accuracy.

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EXECUTIVE SUMMARY

The purpose of this specification manual is to provide detailed instructions on how to report environmental data electronically to the United States Environmental Protection Agency (EPA) Region 5 Superfund Division. The types of Superfund data that can be reported electronically include, for example, data generated during site characterization and investigation phases, data recorded when installing monitoring wells, and monitoring data that is routinely collected after site cleanup is complete. This manual describes the procedural and formatting requirements you need to know to submit your Electronic Data Deliverable (EDD) to the EPA Region 5 Superfund Division.

This EDD manual describes the requirements for reporting all **current** and **future** environmental data to EPA Region 5. Environmental data collected and analyzed **prior** to the initial use of this EDD specification manual should be reported using the EPA Region 5 “Manual for Electronic Data”. The reporting requirements of the “Manual for Electronic Data” are a subset of this EDD specification. EPA recognizes that some information about data collected in the past may not be readily available and, by reducing the requirements for electronic historical data, is endeavoring to strike a balance between minimizing the amount of effort involved in inputting information and maximizing the ability to document remedy progress. The “EDD Manual for Historical Data” is available on EPA Region 5’s E-Data website located at <http://www.epa.gov/region5superfund/edman>.

The EPA Region 5 EDD is comprised of three sets of files: Initial, Chemistry, and Geology. The Initial EDD files refer to a electronic base map of the site property, one file containing general information about the site and about the point of contact for the EDD, and a file containing data pertaining to site sampling locations. The Initial EDD files are only resubmitted if information, such as the point of contact, changes. The three initial files are:

- Base Map (electronic map of the site property boundaries in *.dxf format)
- Site (general information about the site)
- Location (information regarding the sampling locations)

In most cases, the vast majority of the electronic data submitted over the life of the project, and that will be submitted on a reoccurring, routine basis, will be chemistry data. The Chemistry EDD files contain data related to chemistry field measurements, sample collection information, sample tests and results, groundwater levels, and extraction well information. The seven Chemistry EDD files are the:

- Chemistry Field Measurements (information on measurements made in the field)
- Chemistry Sample (information about sample collection)
- Chemistry Test/Result (information on analytical tests and results)
- Chemistry Test Result with QC (information on analytical tests and results along with QC information)
- Batch (test batch information)
- Water Level (information regarding groundwater level measurements)
- Extraction/Injection Well (information about extraction and/or injection wells)

Of the seven files listed above, the Chemistry files that most data providers will submit will be the Chemistry Field Measurements, Sample, Test/Result, and Water Level files. The Test Result with QC and Batch files will only be submitted in those rare cases where EPA requires QA/QC data in electronic format. The Extraction/Injection Well file will only need to be submitted for sites with extraction or injection wells.

The Geology EDD files contain data regarding drilling activities, lithology, geologic sampling, well construction, down hole point data, and water table levels. The seven Geology EDD files are the:

- Drilling Activity (information about drilling activities)
- Lithology (lithology information)
- Well (monitoring well information)
- Well Construction (well construction details)
- Geology Sample (geology sample data)
- Water Table (water table data collected during drilling)
- Down Hole Point (down-hole logging data)

The process for creating initial, chemistry and geology EDDs are shown in Figures E-1 and E-2, respectively. The process begins by identifying the software tool that will be used. Many software tools, such as text editors, word processors, spreadsheets, and databases, are capable of creating EDDs. Because spreadsheets and databases are designed to enter and manage data, however, they are generally preferred for creating EDDs. Microsoft® Access and Excel users can use file templates on EPA Region 5's E-Data website (located at <http://www.epa.gov/region5superfund/edman>) that are already formatted and ready for data entry. Users of other spreadsheet or database software can either use these same templates for data entry, after converting the Excel or Access files into their format, or they can define the EDD in their own software. The production of the data tables will normally be a collaborative effort between laboratories and environmental contractors. The laboratories will typically produce the test/results tables while the contractors normally will produce all of the other tables.

As shown in Figures E-1 and E-2, decision points are included in the EDD creation process to ensure that Initial EDD files have been submitted for a site, as well as to prevent redundancy when getting ready to submit chemistry or geology EDDs. For example, one of the Initial EDDs called the SITE file, which contains data describing the site and site contact information, should generally only be reported once (unless, as previously noted, a change occurs). Similarly, another Initial EDD file, the LOC file, which contains locational data, typically only needs to be reported once. The only time a LOC EDD file would be resubmitted is if the data changed in some way. For example, if settling occurs at a site over time, a resurvey of site monitoring wells may be warranted. If the survey results show changes in the elevations of the monitoring wells, the LOC file would have to be resubmitted.

The final step before submitting an EDD to EPA Region 5 is to check it using the Electronic Data Processor (EDP) software application that is provided on the EPA Region 5 website listed above. This software application will identify any formatting errors in the files that must be corrected prior to submitting the EDD. The EDP replaces the "Electronic Laboratory Data Checker" (ELDC) and the "Electronic Field Data Checker" (EFDC) which were previously used to check the EDD files.

Both phone and email support is available for EPA Region 5 data providers requiring assistance with preparing and submitting EDDs. Please see Section 6 of this document for technical support information. Additionally, EPA Region 5's E-Data website -- <http://www.epa.gov/region5superfund/edman> -- is also a source of information. Copies of the EPA Region 5 EDD Specification Manual, several EDD fact sheets, the EPA Region 5 list of valid values, spreadsheet and database templates, and the EDP software application are available for download at the website.

Figure E-1. Process flow diagram for the creation and checking of Initial and Chemistry EDD files

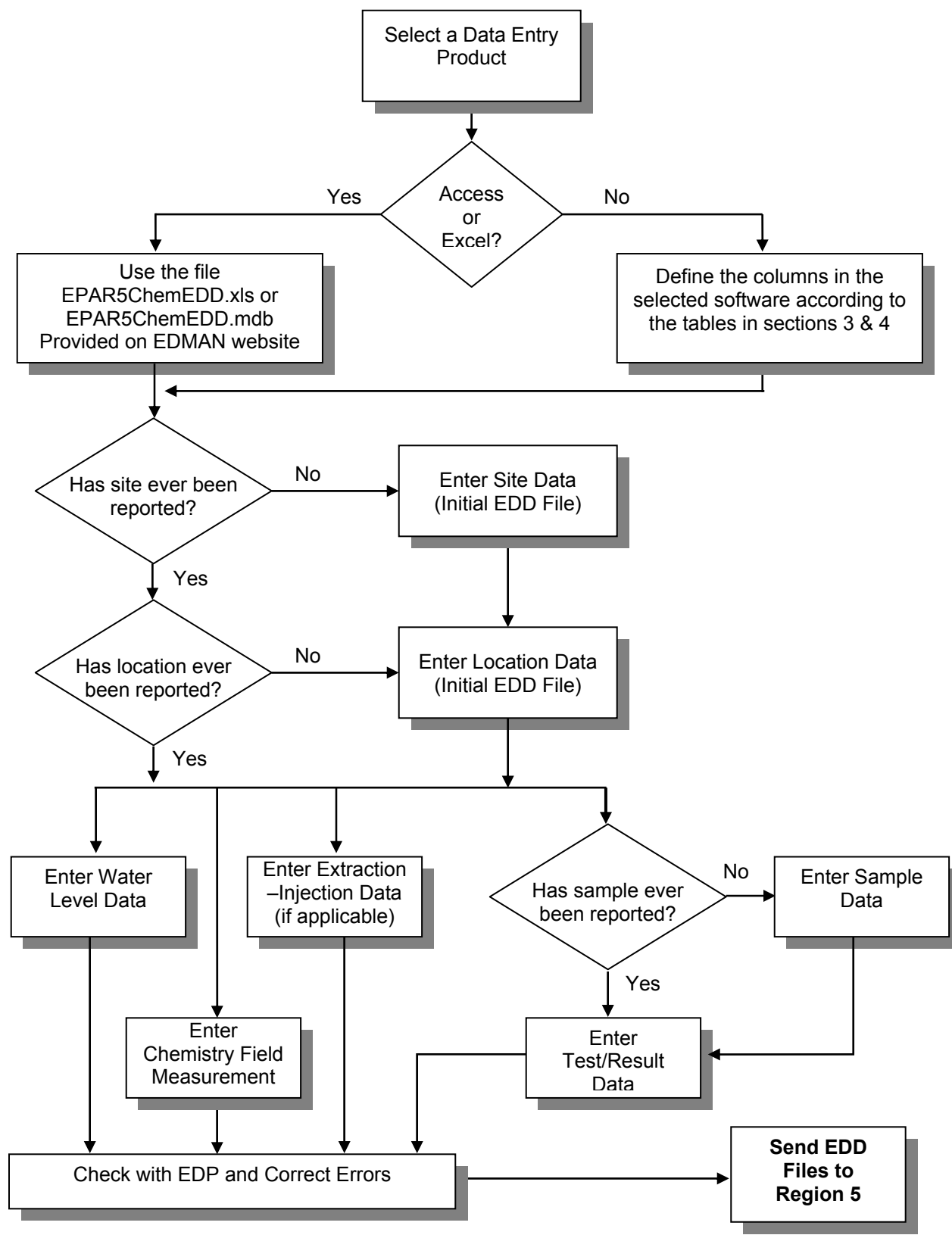
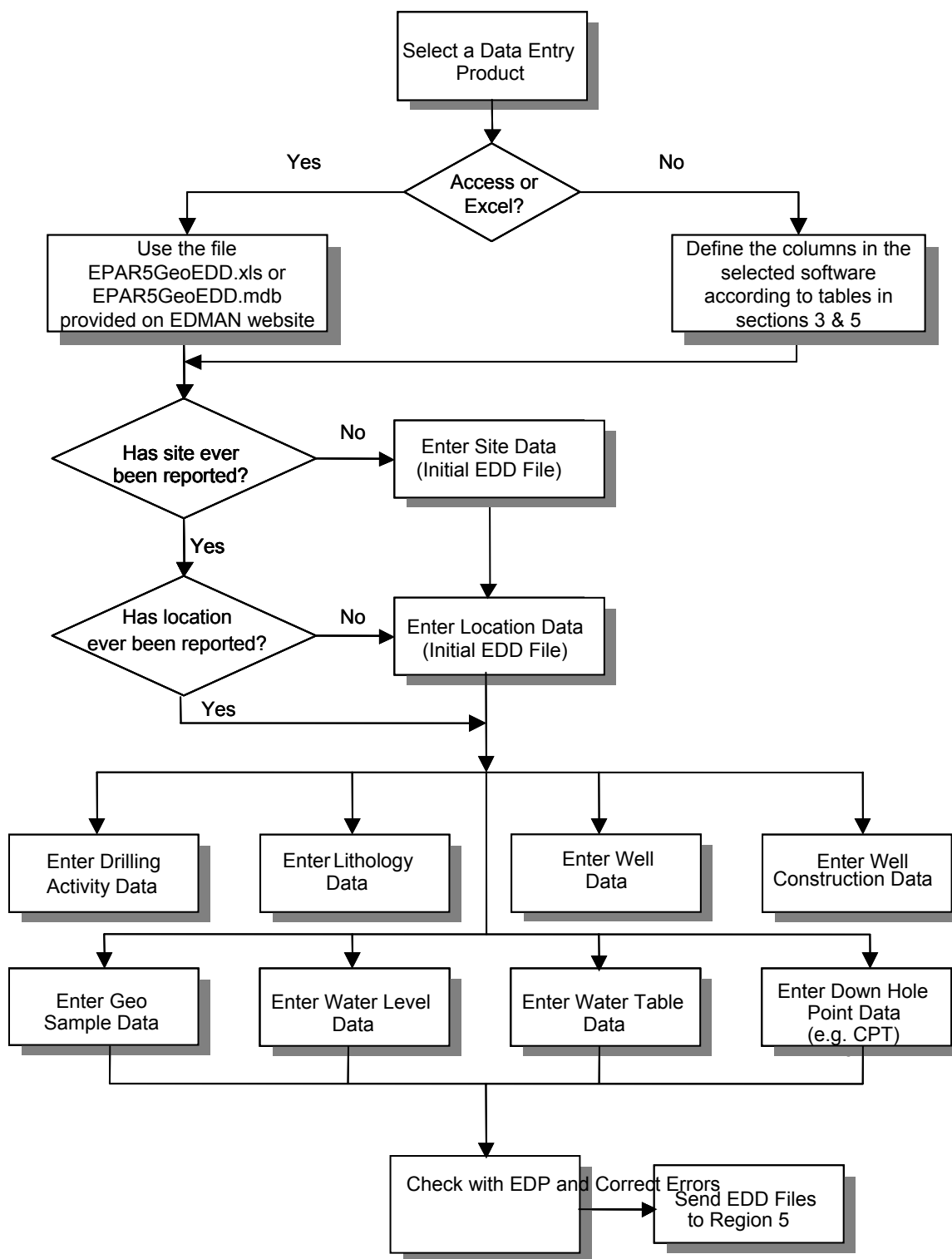


Figure E-2. Process flow diagram for the creation and checking of Initial and Geology EDD files



REVISIONS INCORPORATED INTO VERSION 1.1

The Comprehensive Manual for Electronic Data, Version 1.1, includes a number of changes to the previous version (Version 1.05). The majority of the changes were incorporated in response to suggestions made by EPA Region 5 data providers. The major changes include:

- Revised Section 2.15 to reflect the change from using the ELDC and EFDC data checkers to the new single EDP data checker application
- Revised name, from “Region V EDD Specification Manual” to “Comprehensive Manual for Electronic Data.”
- Changed custom_field_1 (position 26) of EPAR5SMP file to sys_well_code. Field changed from “not wanted” to “required*”.
- Added Section 4.5 to the Manual, which explains the requirements for the new Extraction-Injection Well (EIW) EDD file. The purpose of this new file is to capture both the actual and designed pumping rates for a site’s extraction and injection wells.
- Added analysis_time field to “What makes a row of data unique”, Table 2-2, for Chemistry Test/Result and Chemistry Test/Result with QC Data.
- Added analysis_date, analysis_time, total_or_dissolved, test_type, and changed test_batch_ID to test_batch_type fields to “What makes a row of data unique”, Table 2-2, for Batch.
- Reordered and renumbered Appendix Tables for easier reference.
- Added valid values to the following appendix tables:
 - A-15 Analytes
 - A-16 Lab Analysis Method Name
 - A-14 Standard Preparation Method
 - A-18 Units
 - A-22 Facility IDs
- Added a table to the appendix which contains valid values for loc_major_basin field in the LOC file
 - A-13 Field Parameter
 - A-21 Hydrologic Unit Codes
- Removed Section 5.6, Geology Water Level, and the corresponding geology EDD file, due to its duplication of the file in Section 4.4, Chemistry Water Level. The Chemistry EDD file, which used to be called CWTR, has now been changed to GWTR.
- Clarified EDD submission and resubmission process.
- Increased the length of several fields.
- Clarified descriptions for many EDD fields.
- Added a description on how surface water samples should be handled.

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1. INTRODUCTION TO THE EPA REGION 5 ELECTRONIC DATA DELIVERABLE (EDD)

The EPA Region 5 Superfund Division has developed an electronic data management system to improve how environmental data from Superfund sites are acquired and managed. The system will accelerate the review of environmental data submittals, improve service to the regulated community, and enhance the protection of the environment and the public. A vital element in the electronic transfer of environmental data is the submittal of data in a standardized, “computer-friendly” format. The specifications and formatting requirements for the EPA Region 5 EDD were developed to facilitate the transfer of data from data providers to the EPA.

NOTE: This EDD manual describes the requirements for reporting all **current** and **future** environmental data to EPA Region 5. Environmental data collected and analyzed **prior** to the initial use of this EDD specification manual should be reported using the EPA Region 5 “Manual for Electronic Data”. The reporting requirements of the “EDD Manual for Historical Data” are a subset of this EDD specification. EPA recognizes that some information about data collected in the past may not be readily available and, by reducing the requirements for electronic historical data, is endeavoring to strike a balance between minimizing the amount of effort involved in inputting information and maximizing the ability to document remedy progress. The “Manual for Electronic Data” is available on EPA Region 5’s E-Data website located at <http://www.epa.gov/region5superfund/edman>.

The EPA Region 5 EDD is in part based on standard EDDs used in applications developed by EarthSoft, Inc. However, the format is designed to be software-independent and easy to achieve. Any spreadsheet, database, or text editor can be used to create the EDD files. Examples of applications that can be used to create Region 5 EDDs include Access, FoxPro®, Excel, Quattro®, Lotus® 1-2-3®, and Notepad.

Basically, the EDD is a series of files used to report data. For example, one file is used to report location data while another is used to report samples collected at a location. Multiple files are used to eliminate the need to report redundant data. For example, the data for a location (e.g., coordinates and elevations) are reported once in the location (LOC) file. Many years of sampling and result data may be reported for that location without having to submit the LOC file again.

This specification manual includes examples of EDD files populated with data. In addition, several EDD templates are available on the EPA Region 5 E-Data website (<http://www.epa.gov/region5superfund/edman>) for loading data into the EDD format. The website also contains a no-cost software program, the Electronic Data Processor (EDP), that needs to be used to check EDD files before they are submitted to EPA Region 5. The EDP replaces the two previous Region 5 EDD checker applications, the Electronic Laboratory Data Checker (ELDC) and the Electronic Field Data Checker (EFDC). The EDP is a single application that checks all EDD files and provides a much easier user interface for identifying and correcting errors.

This EDD Specification Manual discusses EDD submittals in five separate sections:

- General reporting requirements are discussed in Section 2.
- The Initial file structures (i.e., base map, site, and location) are defined in Section 3. These files must be submitted prior to, or in conjunction with, the first Chemistry or Geology EDD submittals.
- The Chemistry file structures are defined in Section 4. In most cases, chemistry data accounts for the majority of data that is reported.
- The Geology file structures are defined in Section 5.
- The Appendix contains tables that list valid values for all data fields.

Each file must be reported exactly as defined in these sections. Any deviations will result in loading errors.

EPA Region 5 expects all fields referred to as “Required” or “If available” to be filled in. If data for fields referred to as “If available” or “If applicable” are not available or applicable, respectively, a description of why these fields are not available or applicable should be included in the cover letter that accompanies the EDD submittal. Data fields indicated as “Reserved for future use” should not be reported. These fields were only included so that other EPA regions or states could use the same EDD but have slightly different data type requirements.

Currently, EPA is working to finalize EDD requirements that would be national standards for Superfund data for all 10 EPA Regional offices. When this national Superfund EDD is finalized, data providers who have already begun submitting data according to the EPA Region 5 format will be given time to transition to the national format.

2. GENERAL EDD REPORTING REQUIREMENTS

2.1 File Formats

With the exception of the electronic base map, all data from the EPA Region 5 data providers must be reported as text files. Each data field must be separated either by tabs (tab-delimited) (indicated by the suffix “txt” on the file name) or comma-delimited (indicated by the suffix “csv” on the file name). One other option is to enclose each field in double quotation marks (") (indicated by the suffix “txt” on the file name). However, because using double quotation marks to delineate fields is typically more time consuming (unless the data are already in this format), it is anticipated that this method will not be widely used. Data fields containing no information should not be simply omitted. Instead they should be represented by the delimiter of choice, e.g., by two tabs in tab-delimited files or two commas in comma-delimited files (see example in Section 2.8). The maximum length of each text field is indicated in parentheses in the EDD tables shown in Sections 3, 4, and 5. If the information is less than the maximum length, there is no need to add spaces to the record to ensure that all spaces are used. Maximum length requirements imply that the field can be no longer than the specified number of characters. However, it is completely acceptable to fill the field with fewer characters than the maximum number. Each record -- which is the term used for each line of information -- must be terminated with a carriage return/line feed (created by pressing the “Enter” key in a text editor). Guidance on creating text files can be found in Section 2.14.

2.2 Initial Data Submittals

The initial data submittal consists of a site base map and two data files: the Site (SITE) file and the Location (LOC) file. Initial submittals provide information pertaining to the site, the site EDD contact, and site sampling locations. The base map, Site file, and Location file generally only need to be submitted once at the beginning of the project. These files only need to be resubmitted if any changes occur. Examples of changes that would require resubmittal include changes in site contact information or location data that changes after being resurveyed. New sampling locations established after the initial Location file submittal will require a new submittal with data only pertaining to the new locations. Table 2-1 provides general information on the Initial EDD files. Detailed instructions for creating the Initial EDD files are provided in Section 3, “Formats for Initial Files”. Instructions for submitting your EDDs to EPA Region 5 are presented in Section 2.16.

Table 2-1. General information on the files that comprise the Initial EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Base Map	SiteName.DXF	Data provider	Basemap of site.	Not applicable	Not applicable.
Site (Section 3.2)	SiteNameDate. EPAID. EPAR5SITE_v1. txt (or csv)	Data provider	One-time definition of site including EPA Region 5 data providers’ contact information.	site_code	The location file cannot be loaded without properly referenced sites (site_code).
Location (Section 3.3)	SiteNameDate. EPAID. EPAR5LOC_v1. txt (or csv)	Data provider’s surveyor	One entry for each location on a site. Contains elevation, coordinate and general locational data. Data should only be reported once for a location.	sys_loc_code sys_well_code	Sample, water levels, field measurements, and extraction well data can only be reported for locations that are defined in this file.

2.3 Chemistry Data Submittals

Chemistry EDDs are submitted after each round of sampling and include the following types of files: chemistry field measurements (CFM), chemistry sample information (SMP), test/results (TRS), test/results with QC (TRSQC) (if required), batch information (BAT) (if required), water table levels (GWTR), and extraction and injection well data (EIW) (if applicable). The test/result file is a subset of the test/result with QC file and only one of the two files should be submitted. If the test/result data has accompanying quality control data then the test/result with QC file should be submitted and not the test/result (TRS) file. If there is no quality control data accompanying the data, the test/result file should be submitted and not the test/result with QC file. Laboratory retests should be reported as discussed in Section 2.10.

Table 2-2 provides general information on the files that make up the Chemistry EDD. Detailed instructions for creating the Chemistry EDD files are provided in Section 4, “Formats for Chemistry Files”. Instructions for submitting your EDDs to EPA Region 5 are presented in Section 2.16.

Table 2-2. General information on the files that comprise the Chemistry EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Chemistry Field Measurement (Section 4.1)	SiteNameDate. EPAID. EPAR5CFM_v1. txt (or csv)	Data provider's field sampling team(s)	Measurements taken in field and not associated with a sample (e.g., air temperature).	table_name sys_code param_code measurement_date measurement_time	None.
Chemistry Sample (Section 4.2)	SiteNameDate. EPAID. EPAR5SMP_v1. txt (or csv)	Data provider's field sampling team(s)	One row for each sample collected at the site.	sys_sample_code	Tests/results and batch data can only be reported for samples that are defined in this file.
Chemistry Test/ Result (Section 4.3.1)	SiteNameDate. EPAID. EPAR5TRS_v1. txt (or csv)	Data provider's testing lab(s)	One row for each analyte reported for a given sample and test. Additional rows can be added to report total and dissolved results and to report results for re-extracts.	sys_sample_code lab_anl_method_name analysis_date analysis_time total_or_dissolved test_type cas_rn	None.

Table 2-2. General information on the files that comprise the Chemistry EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Chemistry Test/ Result with QC Data (use only if QC data are required) (Section 4.3.2)	SiteNameDate. EPAID. EPAR5TRSQC_v1. txt (or csv)	Data provider's contractor lab(s)	Test/Result file with additional fields for QC data.	sys_sample_code lab_anl_method_name analysis_date analysis_time total_or_dissolved test_type cas_rn	None.
Batch (use only if QC data are required) (Section 4.3.3)	SiteNameDate. EPAID. EPAR5BAT_v1. txt (or csv)	Data provider's contractor lab(s)	Data that relates laboratory quality control samples with field samples that were processed and analyzed together.	sys_sample_code lab_anl_method_name analysis_date analysis_time total_or_dissolved test_type test_batch_type	None.
Water Level (Section 4.4)	SiteNameDate. EPAID. EPAR5GWTR_v1. txt (or csv)	Data provider's field sampling team(s)	Groundwater level data for monitoring wells	sys_loc_code sys_well_code measurement_date measurement_time	None.
Extraction-Injection Well (Section 4.5)	SiteNameDate. EPAID. EPAR5EIW_v1. Txt (or csv)	Data provider's field sampling team(s)	Data that relates to any extraction wells that are operating as part of the remedial action.	sys_loc_code sys_well_code start_measurement_date start_measurement_time	None.

2.4 Geology Data Submittals

Geology EDD submittals contain data obtained during subsurface investigations at the site. When initially submitting the Geology EDD, all geology EDD files for which information is available should be submitted. The Geology EDD includes files for lithology data (LTH), drilling activities (DRA), general well information (WEL), well construction information (WSG), geology sample data (GSMP), general information about the water table (TBL), and down-hole point data (DHP). Unlike the Chemistry EDD, where submittals are typically submitted on a cyclic basis, in most cases the Geology EDD is submitted only once. Additional Geology EDDs are submitted only if new geology data are collected.

Sites reporting data from monitoring wells installed or from geology-related activities completed more than one year prior to the date of data submittal are not required to submit the Geology EDD files – unless the monitoring wells are being used for operation and maintenance (O&M) monitoring. . However, for all newly installed monitoring wells or current geology data collection efforts (i.e., within one year from

the date of data submittal), data providers must submit all applicable Geology files as detailed in Section 5.

Table 2-3 provides general information on the files that make up the Geology EDD. Detailed instructions for creating the Geology EDD files are provided in Section 5, “Formats for Geology Files”. Instructions for submitting your EDDs to EPA Region 5 are presented in Section 2.16.

Table 2-3. General information on the files that comprise the Geology EDD

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Drilling Activity (Section 5.1)	SiteNameDate. EPAID. EPAR5DRA_v1. txt (or csv)	Data provider's geologist	General Information regarding soil borings.	sys_loc_code event	None.
Lithology (Section 5.2)	SiteNameDate. EPAID. EPAR5LTH_v1. txt (or csv)	Data provider's geologist	Lithology data for a borehole.	sys_loc_code start_depth	None.
Well (Section 5.3)	SiteNameDate. EPAID. EPAR5WEL_v1. txt (or csv)	Data provider's geologist	General information regarding wells.	sys_loc_code sys_well_code	Well construction and water level data can only be reported for wells that are defined in this file.
Well Construction (Section 5.4)	SiteNameDate. EPAID. EPAR5WSG_v1. txt (or csv)	Data provider's geologist	Well construction details recorded during well construction.	sys_loc_code sys_well_code segment_type start_depth material_type_code	None.
Geology Samples (Section 5.5)	SiteNameDate. EPAID. EPAR5GSMP_v1. txt (or csv)	Data provider's geologist or laboratory	Results for geological, physical properties of samples.	Geo_sample_code	None.
Water Table (Section 5.6)	SiteNameDate. EPAID. EPAR5TBL_v1. txt (or csv)	Data provider's geologist	General information pertaining to water table.	sys_loc_code type	None.
Down Hole Point (CPT) Data (Section 5.7)	SiteNameDate. EPAID. EPAR5DHP_v1. txt (or csv)	Data provider's geologist	Results of all down hole logging such as CPT, resistivity, or other geophysical logs.	sys_loc_code depth param	None.

2.5 File Naming Convention

Each file, except the base map file, must be named according to the following convention:

SiteNameDate.EPAIDCode.EDDFileFormat_v1.txt (or .csv)

The first part of the file name is the site name, followed by the submittal date of the EDD with the format for the date being YYYYMMDD. The second part of the file name is the 12-character alphanumeric EPA ID for the facility under investigation. IDs for EPA Region 5 sites are provided in Appendix Table A-22. The third part of the file name refers to the EDD file format for the file being submitted. The “_v1” suffix is an EPA marker to identify which version of the EDD specifications is being followed, and should not be changed by the data provider. The name of the site base map file should include the site name and be saved in .dxf format.

As an example, the sampling data for the 1999 fourth quarter groundwater sampling round at the ABC site (EPA identification number of XYZ123456789) that is being submitted to EPA on February 19, 2000 would be reported in a file named **ABC20000219.XYZ123456789.EPAR5SMP_v1.txt** (or .csv). In the above example, the chemistry sample file (SMP) is being submitted, therefore the EDD File Format portion of the file name is EPAR5SMP_v1. The last part of the file name is an extension that will be “txt” if the file was saved as a tab-delimited file or “csv” if it was saved as a comma-delimited file. Table 2-4 describes the naming formats and for the various Initial, Chemistry and Geology EDD files.

Table 2-4. EDD File Naming Formats

File Type	File Contents	EDD File Name	Submittal Type
Initial	Base Map	Sitename.DXF	Initial
Initial	Site	SiteNameDate.EPAIDCode.EPAR5SITE_v1.txt	Initial
Initial	Location	SiteNameDate.EPAIDCode.EPAR5LOC_v1.txt	Initial
Chemistry	Field Measurements	SiteNameDate.EPAIDCode.EPAR5CFM_v1.txt	Recurring
Chemistry	Sample	SiteNameDate.EPAIDCode.EPAR5SMP_v1.txt	Recurring
Chemistry	Test/Results	SiteNameDate.EPAIDCode.EPAR5TRS_v1.txt	Recurring
Chemistry	Test/Results QC	SiteNameDate.EPAIDCode.EPAR5TRSQC_v1.txt	Recurring
Chemistry	Batch	SiteNameDate.EPAIDCode.EPAR5BAT_v1.txt	Recurring
Chemistry	Water Level	SiteNameDate.EPAIDCode.EPAR5GWTR_v1.txt	Recurring
Chemistry	Extraction – Injection Well	SiteNameDate.EPAIDCode.EPAR5EIW_v1.txt	Recurring
Geology	Drill Activity	SiteNameDate.EPAIDCode.EPAR5DRA_v1.txt	Non-Recurring
Geology	Lithology	SiteNameDate.EPAIDCode.EPAR5LTH_v1.txt	Non-Recurring
Geology	Well	SiteNameDate.EPAIDCode.EPAR5WEL_v1.txt	Non-Recurring
Geology	Well Construction	SiteNameDate.EPAIDCode.EPAR5WSG_v1.txt	Non-Recurring
Geology	Geology Samples	SiteNameDate.EPAIDCode.EPAR5GSMP_v1.txt	Non-Recurring
Geology	Water Table	SiteNameDate.EPAIDCode.EPAR5TBL_v1.txt	Non-Recurring
Geology	Down Hole Point (CPT) Data	SiteNameDate.EPAIDCode.EPAR5DHP_v1.txt	Non-Recurring

2.6 Data Integrity Rules

Data providers are responsible for running three types of integrity checks on their data.

- **Validity:** All codes used in a data set must be valid. Valid values for all coded fields are either provided in the description columns of the tables in Sections 3, 4, and 5 or in the tables in the Appendix of this manual. For example, sample matrix information is inputted in the `sample_matrix_code` field of the sample file and must be reported using one of the values provided in Table A-1 in the Appendix.
- **Row Uniqueness:** Row uniqueness must be verified using the guidance provided in Tables 2-1, 2-2, and 2-3. Row uniqueness is assured when no two rows in a file contain the same values for all the fields listed under the heading “What makes a row of data unique?” In database terminology this is called a primary key. For example, no two rows in the sample file can contain the same `sys_sample_code` (commonly called a sample identifier). In addition, no two rows ever reported for a single site can contain the same `sys_sample_code`. Each `sys_sample_code` must be unique for a site.

Files that have a primary key consisting of multiple fields, such as the location file, must have a different value in at least one of the primary key fields. For example, no two rows in the location file can have the same `sys_loc_code` and the same `sys_well_code`. For example, two rows with `sys_loc_code` of “SB-01” and `sys_well_code` of “MW-1A” would violate row uniqueness. However, row uniqueness would not be violated if one row had a `sys_loc_code` of “SB-01” and `sys_well_code` of “MW-1A” and the other row had `sys_loc_code` of “SB-01” and a `sys_well_code` of “MW-2A”.

- **Row Integrity:** The relationship between rows within the files of the EDD must be assured by enforcing the “referential integrity” rules discussed in Tables 2-1, 2-2, and 2-3 under the column labeled “Dependence of other files on these data.” For example, the values in the `sys_sample_code` field in the Test/Result file must match with the corresponding fields in the Sample file. Logical relationships between the various Chemistry EDD files are shown in Figure 2-1. The lines connecting the files show which column(s) (or field(s)) are related in the two files. The file on the side with the “1” at the end of the connecting line contains one row that is related to more than one row in the related file on the other side. For example, one row in a SITE EDD file may correspond to many rows in a LOC EDD file because there are always more than one, and in most cases many locations, designated at a site. The logical relationship between the Geology EDD files and the Location EDD file is limited to the requirement that all entries in the `sys_loc_code` fields appear in the LOC EDD file. .

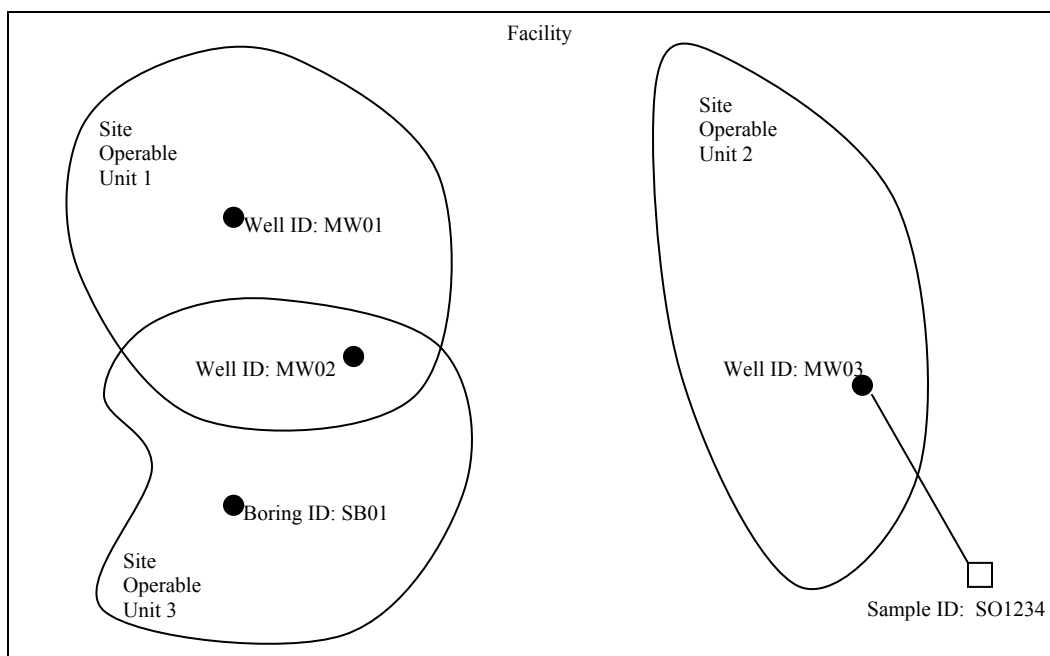
Figure 2-1. Relationships between chemistry file data structures.
Shaded fields are required to have data. Blue fields define row uniqueness for the specified file.



2.7 Definition of a Facility, Site, and Location

To submit and error-free EDD, it is important to understand how EPA Region 5 defines facility, site, and location for the purposes of this EDD Specification Manual. Each facility (facility_id) will be identified with its EPA ID number (see Table A-22 in the Appendix.) The site (site_code) will be the operable unit identifier. There will always be at least one operable unit per facility. The way the location term is used is that each site can contain one or more locations, as long as they are distinct points defined by X and Y universal transverse mercator (UTM) coordinates. Examples of locations include soil borings, monitoring wells, and sampling locations. Each location identifier (sys_loc_code) must be unique for a facility. Figure 2-2 provides a diagram of the facility components.

Figure 2-2. Facility component definitions



Facility ID = EPA ID #

Site = Site Operable Unit = site_code Must be unique at a Facility

Location= sample location, Well ID, Boring ID = sys_loc_code Must be unique at a Facility

2.8 Reporting Null Values

When a field is not listed as required in Sections 3, 4, and 5, and the data is not available or applicable, a null or blank may be appropriate. However, tabs or commas must still delimit the blank value. In other words, the number of fields is always the same, whether or not the fields include data. So a blank field in a tab-delimited file would appear as "<TAB><TAB>" and a blank field in a comma-delimited file would appear as ".,". Table 2-5 shows a number of examples.

Table 2-5. Examples of how to report null values

Example	Comment
"data_one"<tab>"data_two" <tab>"data_three" "data_one","data_two","data_three"	O.K. All fields populated, one tab or comma between fields.
"data_one" <tab><tab>"data_three" "data_one",,"data_three"	O.K. Optional field not populated, 2 tabs or 2 commas between first and third field.

Table 2-5. Examples of how to report null values

Example	Comment
"data_one" <tab>"data_three" "data_one","data_three"	Not O.K. Optional field omitted, only 1 tab or comma between first and third field.

2.9 Valid Values

Valid values, also known as reference values or code lists, govern the contents of some fields in the EDDs. In other words, some fields may only be populated with data that matches a value listed in the EPA Region 5 list of valid values. The lists of valid values are provided in the “EPA Region 5 Electronic Data Deliverable Valid Values Appendix” located at <http://www.epa.gov/region5superfund/edman>. A list of all the data fields that must contain valid values is presented in Table 2-6. This list is also cross-referenced to the EDD file(s) the field appears in. If data providers need to enter a value not already in the Region 5 list in the Appendix, they can request the proposed addition to the valid value list in the EDD cover letter. The data provider should explicitly state the valid value that she/he would like added, provide a description of the value, and explain why the addition is necessary. In the case of requesting a new laboratory code, the data provider should include the full name of the laboratory and its address. When requesting an addition of an analyte, the data provider must include the appropriate CAS number or ERPMS code along with a description of the analyte.

Table 2-6. Cross-reference between the valid value tables in appendix and the EDD files

Valid Value Table Name	Table Number	Field Name	EDD File
Matrix	A-1	sample_matrix_code, lab_matrix_code	Chemistry Samples, Test/Results
Reference Point	A-2	reference_point	Location
Horizontal Collection Method	A-3	horz_collection_method_code	Location
Horizontal Accuracy Unit	A-4	horz_accuracy_unit	Location
Horizontal Datum	A-5	horz_datum_code	Location
Elevation Collection Method	A-6	elev_collect_method_code	Location
Elevation Datum	A-7	elev_datum_code	Location
Source Scale	A-8	source_scale	Location
Location Type	A-9	loc_type	Location
Qualifier	A-10	lab_qualifiers, validator_qualifiers	Test/Results
Result Type	A-11	result_type_code	Test/Results
Sample Type	A-12	sample_type_code	Chemistry Samples
Field Parameter	A-13	Param_code	Chemistry Field Measurements
Standard Preparation Method	A-14	lab_prep_meth	Test/Results
Analyte	A-15	cas_rn, chemical_name	Test/Results
Lab Analysis Method Name	A-16	lab_anl_method_name	Test/ Results
Laboratory	A-17	lab_name_code	Test/Results

Valid Value Table Name	Table Number	Field Name	EDD File
Unit	A-18	various unit fields throughout all files	All Files
Geology Soil Materials	A-19	material_type	Lithology, Geology Samples
Well Segment and Materials	A-20	segment_type, material_type_code	Well Construction
Hydrologic Unit Codes (HUC)	A-21	loc_major_basin	Location
EPA Facility IDs	A-22	facility_id, site_name	Site

2.10 Reporting Re-Tests

For initial tests, all analytes should be reported. In the case where retests are performed on a sample, the result that is considered the reportable result should indicate a “Y” (for “yes”) in the reportable_result field.. The initial test, and any retest result not considered reportable will have reportable_result set to "No". Table 2.7 provides examples of reporting re-tests.

Table 2-7. Example of reporting re-tests

Test Type	Chem Name	Cas rn	Result Value	Detect Flag	Lab Qualifiers	Reportable Result	Result Comment
Initial	Benzene	71-43-2	1000	Y	E	No	too concentrated to quantitate
Initial	Toluene	108-88-3	5	N	U	Yes	not detected
Initial	Xylenes	1330-20-7	5	N	U	Yes	not detected
dilution1	Benzene	71-43-2	780	Y		Yes	quantitated

2.11 Reporting Non-Detects

Non-detects must be reported as shown in the example below. Each non-detect row must show an “N” in the detect_flag field, must have an actual value entered in the reporting_detection_limit and detection_limit_unit fields, and must contain a null in the result_value_field. Table 2.8 presents examples of how to report non-detects.

Table 2-8. Example of reporting non-detects

Cas rn	Result Value	Detect Flag	Reporting Detection Limit	Detection Limit Unit	Result_comment	Laboratory_qualifiers
108-88-3	.15	Y	.005	ug/ml		U
108-88-3		N	.005	ug/ml	not detected	U

2.12 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported when available. The naming of TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the class of the TIC should be entered.. If neither an analyte name or a class can be identified, the TIC should be identified as Unknown. The EPA Region 5 EDD only allows for reporting up to 10 TICs. Only the 10 most concentrated or most relevant TICs should be reported. Table 2-9 shows examples of the nomenclature for TICs. As an example, if a sample has three Unknown Hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC

names are to be reported in the cas_rn field, Pos #31, of the Test/Result file (Tables 4-3 and Table 4-4). In addition, the result_type_code, Pos # 35 in the Test/Result file should have “TIC” for all TIC records.

Table 2-9. Example nomenclature for TIC reporting

TIC Name	Number for TIC	Reported Name in cas_rn
Unknown	1-10	Unknown1 – Unknown10
Unknown Hydrocarbon	1-10	UnkHydrocarb1 - UnkHydrocarb10
Unknown PAHs	1-10	UnkPAH1 - UnkPAH10
Unknown Aromatics	1-10	UnkAromatic1 - UnkAromatic10
Unknown VOA	1-10	UnkVOA1 - UnkVOA10
Unknown SV	1-10	UnkSV1 - UnkSV10

2.13 Data Types

The table below describes the data types used in the chemistry and geology file descriptions. In addition to the types listed below, certain fields have single and double data types. The single data type stores numbers from -3.402823×10^{38} to $-1.401298 \times 10^{-45}$ for negative values and from 1.401298×10^{45} to 3.402823×10^{38} for positive values, with a decimal precision of up to 7 digits. The double data type stores numbers from $-1.79769313486231 \times 10^{308}$ to $-4.94065645841247 \times 10^{-324}$ for negative values and from $1.79769313486231 \times 10^{308}$ to $4.94065645841247 \times 10^{-324}$ for positive values, with a decimal precision of up to 15 digits.

Table 2-10. Data type descriptions

Type	Description	Decimal Precision	Comments
Integer	Stores numbers from -32,768 to 32,767 (no fractions).	None	
'Y' or 'N'	Boolean field used to indicate yes or no to a question. Enter either Y or N.	NA	
Time	Time in 24-hr (military) HH:MM format.	NA	Text(5) is standard length for time.
Date	Date format is MM/DD/YYYY.	NA	
Text	Stores characters and numbers.	NA	Length restrictions are indicated in parentheses.

2.14 Data Entry Tools Provided to Create the EDD Files

EDD files can be produced using any software with the capability to create text files. These files are especially easy to create using spreadsheet or database software packages. However, if these are unavailable, the files can be created using a word processor or text editor. Table 2-11 provides instructions for creating tab-delimited text files from some widely-used software packages.

Table 2-11. Instructions for producing tab-delimited text files from some software packages

Package	Type	Instructions
Access	Database	<ol style="list-style-type: none"> 1. Create tables using file structures in Sections 3 and 4. 2. After data are entered, close table. 3. Click on table name (under table tab) and then select "File," "Save As," from the top menu. Save to an external file or database. Change "Save as Type" to a text file. Change the file extension from "txt" to "tab." Press OK. This will start the export wizard. 4. In the export wizard, select "Delimited," then press the "Next" button. Select "Tab" as the delimiter type and " " as the text qualifier. Press the "Next" button. Select a destination and name for the file. Press the "Finish" button.
Excel	Spreadsheet	<ol style="list-style-type: none"> 1. Select "File," "Save As," from the top menu. Change "Save as Type" to a "Text (Tab Delimited)" file. Press the "Save" button.
Quattro® v8	Spreadsheet	<ol style="list-style-type: none"> 1. Select "File," "Save As," from the top menu. Change the "File Type" to "ASCII Text (Tab Delimited)." Press the "Save Button."
Word	Word Processor	<p>[Note: A word processor is not the best tool for the job! A large paper size will have to be selected to prevent wrapping for most files.] [wrapping?]</p> <ol style="list-style-type: none"> 1. Enter data into a table in Word. Any text entered must be contained within double quotes. 2. Select "Table," "Select Table," from the top menu. When the table is highlighted, select "Table," "Convert to Text," "Separate Text with Tabs." 3. Select "File," "Save As," from the top menu. Change "Save as Type" to "MS DOS Text (*.txt)." Press the "Save" button.
Lotus 1-2-3	Spreadsheet	<ol style="list-style-type: none"> 1. Select "File," "Save As," from the top menu. Change "Save as Type" to a "Comma Separated Value (CSV)" file. Provide file name. Press the "Save" button.

Several files, described below, are included on EPA Region 5's E-Data website (<http://www.epa.gov/region5superfund/edman>) to assist in creating the chemistry and geology EDDs.

- Two Microsoft Excel Workbooks files, EPAR5ChemEDD.xls and EPAR5GeoEDD.xls, provide electronic templates for EDD files. Templates for the Initial EDD files are included in both these Excel files. To create an EDD, simply enter your data into the worksheets provided and then follow the instructions to create a tab-delimited text file.
- Two Microsoft Access database files, EPAR5ChemEDD.mdb and EPAR5GeoEDD.mdb also provide electronic templates for EDD files. Templates for the Initial EDD files are included in both these Access files. To create an EDD, simply enter your data into the database files provided and then follow the instructions to create a tab-delimited text file.

2.15 Using the Electronic Data Processor to Check EDD Formatting

The Electronic Data Processor (EDP) can be used by Data Providers to check EDD files prior to submittal to EPA Region 5. The EDP is a no-cost application that performs a series of formatting checks on the files and then identifies any records that have errors along with a description of the errors. This allows the Data Provider to correct the errors before sending the files to EPA Region 5. EDD files that pass through the EDP error-free should also result in error-free import at EPA Region 5.

EDP is available as a no-cost download from the EPA Region 5 E-Data website located at <http://www.epa.gov/region5superfund/edman>. Instructions on how to install and use the EDP are also provided on the website.

2.16 Submitting Your EDD to EPA

Once your EDD files are complete, please check that they conform with the following guidelines. First, files should not be compressed. Completed EDDs should be created on a 3.5" IBM-compatible diskette, a 100 MB/250MB Zip® Disk, or a CD that is clearly labeled with the site name and the date of the EDDs, and should be sent to :

GEOS E-Data Coordinator (SR-5J)
Superfund Division
U.S. Environmental Protection Agency, Region 5
Chicago, IL 60604

In lieu of sending a disk copy of an EDD, e-mail submittals may be arranged with your Remedial Project Manager (RPM). Each EDD must be accompanied by a cover letter that specifies the name of the site, the contact for EDD technical questions, file names, any exceptions to the EDD format, any requests for additional valid values, and the EDD submittal type (described below). Please include a copy of the cover letter as electronic text file along with the EDD also.)

There are three possible EDD submittal types: an original submittal, an error correction resubmittal, and an update submittal. These three EDD types are described below.

- **Original Submittal:** An original EDD submittal contains data being submitted for the first time to EPA Region 5. EPA Region 5 will process and check the EDD. If there are no errors in any of the EDD files, EPA will import the data to the permanent database. EPA Region 5 can only import and accept the EDD submittal if all files in the submittal are error-free. If any of the files on the EDD contain errors, EPA will send the data provider a letter specifying the errors that need to be corrected.
- **Correction Resubmittal:** In the case where an original EDD submittal contains errors, the entire EDD submittal will be returned to the data provider along with an error report explaining the problems identified. The data provider should then correct the errors, check the files again with the EDP, and then resubmit the entire EDD. It is important that the resubmitted EDD contain all of the files and the SAME FILE NAMES (i.e., use the same site name and submittal date in the file name as was used in the original submittal) as those in the original submittal. Thus, the EDD resubmittal will be identical to the original submittal in everyway except the errors are corrected.
- **Update Submittal :** This type of submittal updates data that has previously been accepted by EPA Region 5. The files of an update submittal should follow the normal naming convention of an EDD submittal and contain only data for the records being updated. For example, say a data

provider submits an EDD in 2001 that includes a location file (e.g., ABC20010121.EPAID.EPAR5Loc_v1.txt) that contains ten locations, and the EDD is accepted by EPA Region 5 and loaded into the EPA database. If, in 2003, the site is resurveyed, and it is discovered that three of the locations' coordinate information has changed due to increased accuracy, a new location file containing data for only those three locations would need to be submitted as an update submittal. The update submittal would be named using the current submittal date of the update (e.g., ABC20031108.EPAID.EPAR5Loc_v1.txt). Note: All required fields need to be populated for the three locations regardless of whether or not these fields were updated. The reason for the update submittal and the records that have been changed must be clearly indicated in the cover letter accompanying the updated EDD.

2.17 Examples of Initial, Chemistry, and Geology EDD Files

Examples of Initial, Chemistry and Geology EDD files with the first few rows of the EDD populated with a typical data set are presented in Figures 2-3, 2-4, 2-5, and 2-6. These examples were produced using Excel worksheets. To submit these files, the data provider would save the files as text delimited files (txt) or comma separated files (csv), check the files using the EDP, and then send the error free files to Region 5. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Sample). The notation “*Additional Fields*” has been inserted where, for purposes of these examples, one or more fields have been omitted.. It should be noted that all fields must appear in the EDD files you submit regardless of whether or not the field is populated (see Section 2.9 regarding reporting blanks, or “null” values). Special cases discussed in previous sections of this manual, as well as more standard types of data, are illustrated below.

Figure 2-3. Example Initial EDD ready for conversion to text file

Site (SITE) File:

site_code	facility_id	site_name	site_task_code	site_desc1	site_desc2	contact_name	address1	<i>Additional Fields</i>	email_address
Example	FAC123456723	Example Site				John Smith	23 Main Street		abc@abd.com

Location (LOC) File:

sys_loc_code	sys_well_code	x-coord	y-coord	surf_elev	elev_unit	coord_sys_desc	observation_date	alt_x_coord	alt_y_coord	coord_type-code	identifier	<i>Additional Fields</i>	comment
MW01	MW01	414456.78	4424543.21	120.2	ft	UTM Zone 17	02/21/1999	-82.00231	39.9612	Lat Long	1		
SB-01	NONE	414709.23	4424304.12	126.3	ft	UTM Zone 17	02/23/1999	-82.00531	39.35794	Lat Long	1		
MW03	MW03a	414601.23	4424700.33	130.1	ft	UTM Zone 17	02/22/1999	-82.01023	39.9701	Lat Long	1		
MW03	MW03b	414601.23	4424700.33	130.1	ft	UTM Zone 17	02/22/1999	-82.01023	39.9701	Lat Long	1		

Notes: SB-01 has no well therefore “NONE” is entered in sys_well_code.
MW03a and MW03b are multiple wells within same boring.

Figure 2-4. Example Chemistry EDD ready for conversion to text file

Chemistry Field Measurements (CFM) File:

table_name	sys_code	param_code	Measurement_date	measurement_time	param_value	param_unit	measurement_method	param_value_background	remark	<i>Additional Fields</i>	calibration_date
Site	Example	Temp	07/12/2000	13:30	29	deg c	Thermometer		Ambient air temp		
Location	MW01	pH	07/12/2000	14:20	7.2	Ph units	pH probe		pH of groundwater		

Figure 2-4. Example Chemistry EDD ready for conversion to text file (cont.)

Sample (SMP) File:

sys_sample_code	sample_name	sample_matrix_code	sample_type_code	sample_source	parent_sample_code	sample_delivery_group	sample_date	sample_time	sys_loc_code	Additional Fields	comment
MW01040198		WG	N	Field			04/01/1998		MW01		
MW02040198		WG	N	Field			04/01/1998		MW02		

Test/Result (TRS) File:

sys_sample_code	lab_anl_method_name	Additional Fields	total_or_dissolved	column_number	test_type	lab_matrix_code	analysis_location	basis	Additional Fields	dilution_factor	lab_name_code	qc_level	lab_sample_id	Additional Fields
MW02040198	SW8240		T		Initial	WG	LB	Wet		1.0	ABC	quant	LAB01	
MW02040198	SW8240		T		Initial	WG	LB	Wet		1.0	ABC	quant	LAB02	
MW02040198	SW8240		T		Reanalysis	WG	LB	Wet		10.0	ABC	quant	LAB02R	

Test/Result file (continued):

cas_rn	chemical_name	result_value	result_error_delta	result_type_code	reportable_result	detect_flag	lab_qualifiers	organic_yn	reporting_detection_limit	Quantitation_limit	result_units	Additional Fields	result_comment
71-43-2	BENZENE	12		TRG	Yes	Y		Y	10		ug/ml		
108-88-3	TOLUENE			TRG	Yes	N		Y	10		ug/ml		
1330-20-7	XYLENES			TRG	Yes	N		Y	10		ug/ml		

Water Level (GWTR) File:

sys_loc_code	sys_well_code	measurement_date	measurement_time	historical_ref_elev	water_level_depth	water_level_elev	corrected_elev	Additional Fields	remark
MW01	MW01	05/10/1999	13:10		31.1	89.1			
MW02	MW02	05/10/1999	13:45		34.1	89.0			

Extraction – Injection Well (EIW) File:

sys_loc_code	sys_well_code	Start_measurement_date	Start_measurement_time	end_measure_date	end_measure_time	avg_pump_rate	pump_rate_unit	Additional Fields	remark
EX-01	EX-01	05/12/2000	11:23	06/12/2000	11:30	2.5	mgd		
EX-02	EX-02	11/12/2000	12:00	12/12/2000	13:10	1.75	mgd		

Figure 2-5. Examples of QC data fields in a Chemistry EDD

QC fields in a normal field sample (i.e., sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result (TRS) file for a normal field sample. Notice that all QC fields are blank.

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5	1.56								
94-75-7	3.17								
94-82-6	2.31								

QC fields in a normal field sample with surrogates (i.e., sample_type_code = N, TB, etc.)

The following table shows some of the fields in the test/result file (TRS) for a normal field sample. Notice that QC fields are blank except in rows related to surrogate samples. . Many data providers will only need to populate the recovery field data; the spike-added and spike-measured fields will not be needed in most situations.

Cas_rn	result_value	result_unit	result_type_code	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery
93-76-5	1.56	mg/l	TRG				
94-75-7	3.17	mg/l	TRG				
PHEN2F		mg/l	SUR		12.5	12.9	103

QC fields in a laboratory method blank sample (i.e., sample_type_code = LB)

The following table shows some of the fields in the test/result file for a laboratory method blank sample. Notice that all QC fields are blank.

cas_rn	result_value	lab_qualifier	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5		U								
94-75-7		U								
94-82-6	0.01									

Figure 2-5. Examples of QC data fields in a Chemistry EDD (continued)

QC fields in a matrix spike (i.e., sample_type_code = MS)

The following table shows some of the fields in the test/result file for a matrix spike sample. Notice that all "dup" QC fields are blank and that the result_value field is not needed. Also, the qc_rpd field would be blank for these rows. Many data providers will only need to populate the calculated recovery field (qc_spike_recovery).

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	Qc_rpd	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5		1.56	4.18	5.36	90.9					
94-75-7		3.17	4.18	7.15	95.2					
94-82-6		2.31	4.22	5.66	79.3					

QC fields in a matrix spike duplicate (i.e., sample_type_code = SD)

The following table shows some of the fields in the test/result file for a matrix spike duplicate sample. Notice that all "dup" QC fields are filled in and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many data providers will only need to populate the calculated recovery field (qc_dup_spike_recovery).

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	Qc_rpd	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5						10	1.56	4.23	5.70	97.8
94-75-7						12	3.17	4.23	7.62	105
94-82-6						15	2.31	4.13	5.33	73.1

QC fields in a matrix spike/matrix spike duplicate (i.e., sample_type_code = MSD)

The following table shows some of the fields in the test/result file for a matrix spike/matrix spike duplicate considered as a single sample. (Note: Matrix spike and matrix spike duplicate samples can be reported either this way or as two separate samples as shown above). Notice that all QC fields are filled in and the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. Many data providers will only need to populate the calculated recovery fields (qc_spike_recovery and qc_dup_spike_recovery).

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	Qc_rpd	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5		1.56	4.18	5.36	90.9	7	1.56	4.23	5.70	97.8
94-75-7		3.17	4.18	7.15	95.2	10	3.17	4.23	7.62	105
94-82-6		2.31	4.22	5.66	79.3	8	2.31	4.13	5.33	73.1

QC fields in a LCS (i.e., laboratory control sample, blank spike, sample_type_code = BS)

The following table shows some of the fields in the test/result file for an LCS sample. The qc_rpd field would be blank for these rows. Many data providers will only need to populate the calculated recovery field (qc_spike_recovery). LCS duplicate samples (i.e., sample_type_code = BD) and LCS/LCSD samples (i.e., sample_type_code = BSD) follow the patterns similar to the SD and MSD samples described above.

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-5			5.00	5.26	105				
94-75-7			1.00	1.02	102				
94-82-6			12.5	12.9	103				

Figure 2-6. Example Geology EDD ready for conversion to text file

Drill Activity (DRA) File:

sys_loc_code	drill_event	start_depth	end_depth	drill_date	diameter	Additional Fields	purpose	
W-4A	1a	40	80	07/12/1999	8		Advanced well additional 40 feet to reach lower aquifer	
W-6B	2c	45	110	07/14/1999	8		Advanced well 55 feet to reach bedrock.	

Lithology (LTH) File:

sys_loc_code	start_depth	material_type	geo_unit_1	Additional Fields	Remark_1	Additional Fields	odor
W-1A	0	CL	Glacial		grayish brown clay, trace fine sand, med strength, med plastic, rapid dilatancy ,some brick fragments		
W-1A	10	SW	Outwash		med dense, 50% fine to coarse brown sand, 30% gravel, dry, trace clay		
W-1A	23	SP	Outwash		dense, 70% coarse brown sand, 20% gravel, poorly graded, rounded, moist		
W-2A	0	ML	Alluvial		Dark brown silt with little fine sand, low strength, nonplastic, rapid dilatancy		

Well (WEL) File:

sys_loc_code	sys_well_code	Additional Fields	top_casing_elev	datum_value	datum_unit	datum_desc	Additional Fields	geologic_unit_code	remark
W-1A	W-1A		122.0	122.0	ft	top of casing of well		outwash	
W-2A	W-2A		122.3	122.3	ft	top of casing of well		alluvial	

Figure 2-6. Example Geology EDD for new monitoring wells or direct push samples ready for conversion to text file (continued)

Well Construction (WSG) File

sys_loc_code	sys_well_code	segment_type	material_type_code	start_depth	end_depth	depth_unit	inside_diameter	Additional Fields	remark
W-1A	W-1A	surface plug	concrete	0	1.5	ft	4.5		
W-1A	W-1A	annular backfill	neat cement grout	1.5	8	ft	2.375		
W-1A	W-1A	annular Seal	Bentonite pellets	8	8	ft	2.375		
W-1A	W-1A	Filter Pack	sand pack	8	23.1	ft	2.375		
W-1A	W-1A	Protective Casing	steel	-2.2	3.2	ft	4		
W-1A	W-1A	casing	stainless steel 304	-2.1	24	ft	2		
W-1A	W-1A	screen	stainless steel 304	24	29	ft	2		
W-2A	W-2B	protective casing	steel	-2.0	3.0	ft	2		
W-2A	W-2B	surface plug	concrete	0	1.5	ft	4.5		
W-2A	W-2B	annular backfill	neat cement grout	1.5	10	ft	2.375		

Geology Sample (GSMP) File:

sys_loc_code	Geo_sample_code	sample_name	sample_top	sample_bottom	sample_date	Additional Fields	sample_method	material_type	Additional Fields	organic carbon units
W-1A	ABCD-1		4	6	04/23/1999		split spoon	SW		
W-1A	ABCD-2		14	16	04/23/1999		split spoon	SW		
W-2A	DEFG-1		5	7	04/24/1999		split spoon	SP		

Figure 2-6. Example Geology EDD for new monitoring wells or direct push samples ready for conversion to text file (continued)

Water Table (TBL) File:

sys_loc_code	Type	sequence	Depth	flowing_yn	measurement_method	capped_pressure	capped_pressure_unit	Additional Fields	temperature_unit
MW01	Unconfined	stable	21.2	y	electric sensor				
MW02	Unconfined	stable	21.0	y	electric sensor				

Geology Down Hole Point (DHP) File:

sys_loc_code	Depth	param	param_value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8
MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	489

3. FORMATS FOR INITIAL FILES

This section contains information regarding the base map and the two files included in the initial EDD. These files need to be submitted prior to, or in conjunction with, the first Chemistry EDD or Geology EDD submittals. These files only need to be submitted once unless information in the files changes or additional information, such as a new sampling location, needs to be added. Columns marked “Required” must be reported for each row in the file. If these fields are not reported, errors will be identified in the EDD and the EDD will need to be resubmitted. Columns marked “If available” should also be reported if possible.

3.1 Site Base Maps

Site base maps must be electronic CAD files in a DXF interchange format. The maps should include all well locations, waste management units, landfills, buildings, and roads. Do not include any groundwater contours, contaminant contours, or other temporal type information. If the CAD file is available in real world locational coordinates, provide the coordinates along with a brief text description of the type of projection and datum used. (Note: UTM NAD 83 is the data type preferred by EPA Region 5). Also include text descriptions of the units and scale of the base map. The site base map file should be named according to the following example:

SiteName.DXF

3.2 SITE EDD File

The SITE EDD file provides general information about a site and provides the name, e-mail address, and other contact information for the main EDD data contact for the site. The SITE file is a required part of any initial EDD submittal. An example of a Site file is provided in Figure 2-3, section 2.17. **NOTE:** If the SITE EDD file was previously submitted, including as part of a “Historic Data EDD”, as described in the Region 5 “EDD Manual for Historical Data”, you DO NOT need to resubmit the file again.

Each SITE file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5SITE_v1.txt (or .csv)

Table 3-1. SITE File

Pos#	Column Name	Data Type	Required	Description
1	site_code	Text(3)	Required	Code indicating the site operable unit for which the data is collected. Typically the code is “01” unless there is a second or third operable unit at facility. Codes of “02” and “03” should be used for second and third operable units, respectively. Contact the EPA RPM if unsure of proper code.
2	facility_id	Text(20)	If available	This is equivalent to the three-letter, nine-digit EPA CERCLIS ID number. See Table A-22 in the Appendix for a list of appropriate values.
3	site_name	Text(60)	Required	Name of site. Please use the name as it appears in Table A-1 of the Appendix.

Table 3-1. SITE File

Pos#	Column Name	Data Type	Required	Description
4	site_task_code	Text(10)	If available	Code used to identify the task under which the site or area is investigated. This field is for informational purposes only. Field samples are formally associated with task codes.
5	site_desc1	Text(255)	If available	General description of the site.
6	site_desc2	Text(255)	If available	Additional description of site, if necessary.
7	contact_name	Text(50)	Required	Name of person to contact if EPA Region 5 has any questions about the EDD.
8	address1	Text(40)	Required	Site address, part one.
9	address2	Text(40)	If available	Site address, part two. Default to null if information is not needed
10	City	Text(30)	Required	Site city.
11	State	Text(2)	Required	Site state.
12	Zipcode	Text(10)	Required	Site zip code.
13	phone_number	Text(30)	Required	Site contact phone number.
14	alt_phone_number	Text(30)	If available	Alternate phone number for site contact. Default to null where the data are not available.
15	fax_number	Text(30)	If available	Fax number of site contact. Default to null where the data are not available.
16	email_address	Text(100)	Required	Site contact e-mail address.

3.3 Location EDD File

The primary purpose of the Location (LOC) EDD file is to define the sampling locations for a site. This file is referred to as one of the Initial EDD files because it needs to be submitted -- and error-free -- before EDD files that contain chemistry and geology data can be used. Each row of the LOC file contains the definition of a unique sampling location. Do not create any records (i.e., rows) for any samples not associated with a specific sampling location, such as field blanks and trip blanks. In the case of multiple wells located in one borehole, each well in the borehole will have the same sampling location identifier (sys_loc_code), but will be differentiated in the LOC file by a unique well identifier (sys_well_code), such as MW-01a or MW-01b. An example of this case is presented in the Location file in Figure 2-3.

Each sampling location should only be reported once for a site. The only time data for a previously reported location should be resubmitted is if some information about the location changes, such as when a location is resurveyed after settling has occurred or after a resurvey using an instrument or methodology with higher accuracy. When resubmitting changes to the LOC file, the file should contain rows pertaining to the affected locations only. As in a typical EDD submittal, all “required” fields should be populated when updating data. Changes in the resubmittal should be described in the cover letter accompanying the EDD, and the EPA RPM should receive a copy of the letter or should be otherwise notified. See section 2.16 “Submitting Your EDD to EPA” for more information regarding submitting updated data files.

The data structure of the LOC EDD file includes fields (Positions 8 through 21 in Table 3-2) to collect data requirements of EPA’s Locational Data Policy (LDP). LDP requires geographic coordinates and associated method, accuracy, and description (MAD) codes for all environmental measurements collected by EPA employees, contractors, and grantees. A key premise of the LDP policy is that secondary use of these data in geographic information systems (GIS) and statistical mapping programs are significant to the overall mission of the Agency. To facilitate the integration of data, EPA has established the LDP to standardize the coding of geologic coordinates and associated attributes. Therefore, in addition to location

coordinates being reported in UTM meters, Region 5 requests that coordinates be reported in latitude and longitude, along with associated attributes, if the data is available. An example of a Location file is provided in Figure 2-3, section 2.17. **NOTE:** If the LOC EDD file was previously submitted, including as part of a “Historic Data EDD”, you DO NOT need to resubmit the file again.

Each Location file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5LOC_v1.txt (or .csv)

Table 3-2. Location file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Location ID, such as MW-01, A24, SW12, or SB-2S, for all samples collected, including groundwater samples, hydropunch samples, surface water/sediment samples, and soil samples.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells installed at the same location. If only one well exists at a location, insert the same code as in the sys_loc_code field (position #1). For surface water samples use "Surface". For all soil and other samples not associated with a well, insert "None."
3	x_coord	Number w/decimal precision up to 15	Required	Sampling location numeric x coordinate in UTM NAD83 meters coordinate system.
4	y_coord	Number w/decimal precision up to 15	Required	Sampling location numeric y coordinate in UTM NAD83 meters coordinate system.
5	surf_elev	Number w/decimal precision up to 15	Required	Elevation of the ground surface, or if location is for surface water samples, water surface elevation. For water surface elevation, use the average annual elevation. Note: Subsequent water surface elevations should be obtained during the surface water sampling period and reported in the Water Level EDD file (see sections 4.2 and 4.4).
6	elev_unit	Text(15)	Required	Unit of measurement for elevations. Note: At this time, units must be feet.
7	coord_sys_desc	Text(70)	Required	Sampling location coordinate system description. Must be UTM followed by appropriate zone number, e.g., UTM zone 16.
8	observation_date	Date	If available	Date observation or site survey was made.
9	alt_x_coord	Text(20)	If available	Longitude of sampling location in decimal degrees.
10	alt_y_coord	Text(20)	If available	Latitude of sampling location in decimal degrees.

Table 3-2. Location file data structure

Pos#	Column Name	Data Type	Required	Description
11	coord_type_code	Text(8)	If available	Code for the coordinate type used for alt_x and alt_y. In all cases this will be "Lat Long."
12	Identifier	Text(1)	Reserved for future use	This field is only to be used by EPA Region 5 personnel. Please leave blank.
13	horz_collect_method_code	Text(2)	If available	Method used to determine the latitude/longitude. Use codes in Appendix Table A-3, Horizontal Collection Method.
14	horz_accuracy_value	Text(20)	If available	Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.
15	horz_accuracy_unit	Text(1)	If available	Unit of the horizontal accuracy value. Use values in Table A-4 of the Appendix.
16	horz_datum_code	Text(1)	If available	Reference datum of the latitude and longitude. Use codes in Table A-5 of the Appendix.
17	elev_collect_method_code	Text(2)	If available	Method used to determine the ground elevation of the sampling location. Use codes in Table A-6 of the Appendix.
18	elev_accuracy_value	Text(20)	If available	Accuracy range (+/-) of the elevation measurement.
19	elev_accuracy_unit	Text(15)	If available	Unit of the elevation accuracy value. Use values in Table A-18 of the Appendix.
20	elev_datum_code	Text(1)	If available	Reference datum for the elevation measurement. Must use valid value from Table A-7 of the Appendix 7.7
21	source_scale	Text(2)	If available	Scale of source used to determine the latitude and longitude. Must be a valid code from Table A-8 of the Appendix. If GPS is used, this field does not apply and "N" should be entered.
22	subcontractor_name_code	Text(20)	If available	Code used to distinguish subcontractor name.
23	verification_code	Text(1)	Reserved for future use	This field is only to be used by EPA Region 5 personnel. Please leave blank.
24	reference_point	Text(2)	If available	Describes the place at which coordinates were established. Use codes from Table A-2 in the Appendix.
25	geometric_type_code	Text(20)	Reserved for future use	This field is for by EPA Region 5 future use. Please leave blank.

Table 3-2. Location file data structure

Pos#	Column Name	Data Type	Required	Description
26	Rank	Long	Reserved for future use	This field is for by EPA Region 5 future use. Please leave blank.
27	loc_name	Text(40)	If available	Sampling location name.
28	loc_desc	Text(255)	If available	Sampling location description.
29	loc_type	Text(10)	If available	Description of sampling type, such as direct push, extraction well, or sediment. Use codes from Table A-9 in the Appendix.
30	loc_purpose	Text(20)	If available	Sampling location purpose.
31	primary_site_code	Text(3)	Required	Unique code for site or area. Must match site_code field from Table 3-1: Site File Data Structure.
32	within_facility_yn	Text(1)	Required	Indicates whether this sampling location is within facility boundaries, "Y" for yes or "N" for no.
33	loc_county_code	Text(20)	If available	Location county code; controlled vocabulary using FIPS (Federal Information Processing Standard) codes. FIPS codes can be found via the internet at http://www.itl.nist.gov/fipspubs/ or http://www.oseda.missouri.edu/jgb/geos.html .
34	loc_district_code	Text(20)	If available	Location district code; controlled vocabulary using FIPS codes.
35	loc_state_code	Text(10)	If available	Location state code; controlled vocabulary using FIPS codes.
36	loc_major_basin	Text(8)	If available	Location major basin; controlled vocabulary using HUC (hydrologic unit codes). Use values listed in Table A-21 in the Appendix.
37	loc_minor_basin	Text(20)	If available	Location minor basin; controlled vocabulary using HUC codes. Any digits after the 8 th (first 8 are reported in loc_major_basin) should be reported here.
38	Remark	Text(255)	If applicable	Location specific comment.
39	total_depth	Number w/decimal precision up to 15	If available	Total depth below ground surface of boring, in feet.
40	depth_to_bedrock	Number w/decimal precision up to 15	If available	Depth below ground surface of bedrock in feet.

Table 3-2. Location file data structure

Pos#	Column Name	Data Type	Required	Description
41	depth_to_top_of_screen	Number w/decimal precision up to 15	If available	Depth in feet below ground surface to the top of the well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if well is not at this location.
42	depth_to_bottom_of_screen	Number w/decimal precision up to 15	If available	Depth in feet below ground surface to bottom of well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if well is not at this location.
43	top_casing_elev	Number w/decimal precision up to 15	If available	Elevation of the top of casing in feet. Leave null if well is not at this location.
44	datum_value	Number w/decimal precision up to 15	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.
45	datum_unit	Text (15)	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.
46	step_or_linear	Text (6)	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.
47	datum_collect_method_code	Text (2)	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.
48	datum_desc	Text(70)	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.
49	start_date	Date	Reserved for future use	This field is for by EPA Region 5 future use. Please leave null.

4. FORMATS FOR CHEMISTRY FILES

This section contains tables that define the file structures for the Chemistry EDD. The file structures include field measurement, chemistry sample, test/result, water level, and extraction well. Please notice that some columns are labeled as “Reserved for future use.” These columns should simply be reported as null values and are only needed to comply with standard EQuIS® reporting formats. Columns marked “Required” must be reported for each row. If an EDD is submitted with one or more “Required” fields not filled in, EPA will not be able to load the EDD into its database, and the EDD will have to be returned to the data provider for correction(s). Columns marked “If available” should be filled in if at all possible.

The test/result file is a subset of the test/result with QC file and only one of the two files should be submitted. If the test/result data has accompanying quality control data then the test/result with QC file should be submitted and not the test/result (TRS) file. If there is no quality control data accompanying the data, the test/result file should be submitted and not the test/result with QC file.

4.1 Chemistry Field Measurements EDD File

This file is used for *in situ* measurements taken in the field -- such as pH, conductivity, Eh, and dissolved oxygen -- that are not associated with a sample but are associated with either the overall site or a particular location. Measurements such as air temperature at the site would also be included in this EDD file. Laboratory results for a sample, even if the analysis was done on-site using a mobile lab should not be entered into this EDD file. The majority of chemistry data associated with individual samples should be reported according to the instructions in Sections 4.2 and 4.3. An example of a Chemistry Field Measurements file is provided in Figure 2-4, section 2.17.

Each chemistry field measurement (CFM) EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5CFM_v1.txt (or .csv)

Table 4-1. Chemistry field measurement file data structure

Pos#	Column Name	Data Type	Required	Description
1	loc_vs_site	Text (35)	Required	Enter “Location” if the measured parameter pertains to a single location, such as a measurement taken at a well. Enter “Site” if the measured parameter pertains to the site as a whole, such as air temperature.
2	sys_loc_code or site_code	Text (20)	Required	If the parameter applies to a specific sample location, enter the sys_loc_code. The sys_loc_code must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD. If the parameter applies to the site as a whole, enter a site_code, such as 01, which is found in field 1 of the EDD Site file.

Table 4-1. Chemistry field measurement file data structure

Pos#	Column Name	Data Type	Required	Description
3	param_code	Text (10)	Required	Parameter being measured. Use values from Table A-13 in the Appendix. The values in Table A-13 were derived from the Chemical Abstracts Registry (CAS) Number for the parameter, if it was available. Otherwise the value was derived from the USAF ERPIMS PARLABEL.
4	measurement_date	Date	Required	Date of measurement in MM/DD/YYYY format
5	measurement_time	Text (5)	Required	Time of sample collection in 24-hr (military) HH:MM format. Default to 00:00 if unknown
6	param_value	Text (20)	Required	Measured value.
7	param_unit	Text (15)	Required	Units that correspond to param_value. See Table A-18 in the Appendix for a list of valid values.
8	measurement_method	Text (20)	If available	Method used to collect the measurement.
9	param_value_background	Text (20)	If available	Background value of measured parameter.
10	Remark	Text (255)	If available	Any comment or information, such as measurement detection limit, as needed.
11	subcontractor_name_code	Text (10)	If available	Name of contracting company responsible for field measurements.
12	worker_name	Text (50)	If available	Name of individual that took the measurement.
13	instrument_id	Text (50)	If available	Identifier for instrument used to take measurement.
14	calibration_date	Date	If available	Date that instrument was last calibrated in MM/DD/YYYY format

4.2 Chemistry Sample EDD File

The Chemistry Sample (SMP) EDD file contains data for samples collected at a site and location. The unique identifier for each sample is recorded in the sys_sample_code. For trip blank samples, please record the sys_sample_code as “TB” plus the date on which the sample was collected in MMDDYY format. For example a trip blank collected on April 5, 2000 would have a sys_sample_code of TB040500. A sys_sample_code of ‘Trip Blank’ is unacceptable because it cannot be distinguished from another trip blank labeled the same way. For samples that are not associated with a specific sampling location, such as trip blanks or field blanks, leave the sys_loc_code field (field 10) null. For surface water samples, record the sample depths, start_depth (field 11) and end_depth (field 12), as depth below the water surface elevation. The water surface elevation at the time of the sampling should be recorded in the Water Level file (see Section 4.4). An example of a Chemistry Sample file is provided in Figure 2-4, section 2.17.

Each Chemistry Sample file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5SMP_v1.txt (or .csv)

Table 4-2. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_sample_code	Text(40)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers; however, uniqueness throughout the database is required.
2	sample_name	Text(30)	If available	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK). Can be the same value as in the sys_sample_code field.
3	sample_matrix_code	Text(3)	Required	Code that identifies the matrix being sampled, such as soil, groundwater, or sediment. For acceptable valid values, see Table A-1 in the Appendix.
4	sample_type_code	Text(3)	Required	Code that distinguishes between different types of samples, such as normal field samples versus laboratory method blank samples. For acceptable valid values see Table A-12 in the Appendix.
5	sample_source	Text(5)	Required	Identifies where the sample originated. Use either "Field" or "Lab". Use "Field" for all samples originating from the field and use "Lab" if sample originated from the laboratory.
6	parent_sample_code	Text(40)	Required for field duplicate samples	Unique identifier of the original sample from which the current sample was derived, i.e. the "parent" sample. Required for samples with a sample_type_code of "BD", "FD", "FR", "FS", "LR", "MS", "MSD" or "SD."
7	sample_delivery_group	Text(10)	If available	EPA and most EPA Region 5 data providers are accustomed to using the Contract Laboratory Program (CLP) document definition of the sample delivery group (SDG). However, the CLP definition of an SDG relates to a lab payment group which is not what is being asked for in this field. For the purposes of this field in this EDD, the value entered should correspond more to the "sampling event/ matrix" with which the sample is associated. For example, the SDG for ground water samples should be different from that for surface water samples. This will prevent flags associated with surface water matrix effects from being propagated to ground water results
8	sample_date	Date	Required	Date sample was collected in MM/DD/YYYY format.
9	sample_time	Text(5)	If available	Time of sample collection in 24-hr (military) HH:MM format. Default to 00:00 if unknown
10	sys_loc_code	Text(20)	Required*	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD. * Field should be null if sample is not associated with a specific location, such as QC samples (e.g., field blank, trip blank)

Table 4-2. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description
11	start_depth	Number w/decimal precision up to 15	If applicable	<p>Beginning depth (top) of sample in feet below ground surface. For surface water samples, use beginning depth below water surface elevation. The water surface elevation at the time sample was collected should be reported in the Water Level (GWTR) EDD file.</p> <p>This field should be left null for most ground water samples collected from monitoring wells. The database will base the start depth for groundwater samples on the starting depth of the well screen as it is listed in the well construction (WSG) and well (WEL) EDD files.</p> <p>Enter depth for groundwater samples only if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.</p>
12	end_depth	Number w/decimal precision up to 15	If applicable	<p>Ending depth (bottom) of sample in feet below ground surface. For surface water samples, use ending depth below water surface elevation. The water surface elevation at the time sample was collected should be reported in the Water Level (GWTR) EDD file.</p> <p>This field should be left null for most ground water samples collected from monitoring wells. The database will base the end depth for groundwater samples on the end depth of the well screen as it is listed in the well construction (WSG) and well (WEL) EDD files.</p> <p>Enter depth for groundwater samples only if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.</p>
13	depth_unit	Text(15)	If applicable	Unit of measurement for the sample beginning and end depths. For valid values, see Table A-18 in the Appendix.
14	chain_of_custody	Text(15)	If available	Chain of custody identifier. A single sample may be assigned to <u>only one</u> chain of custody.
15	sent_to_lab_date	Date	If available	Date sample was sent to lab in MM/DD/YYYY format.
16	sample_receipt_date	Date	If available	Date that sample was received at laboratory in MM/DD/YYYY format.
17	sampler	Text(30)	If available	Name or initials of sampler.
18	sampling_company_code	Text(10)	Required	Name or initials of consulting company performing sampling. (This field does not have a controlled vocabulary, i.e., there is no table of valid values for this field.)
19	sampling_reason	Text(30)	Reserved for future use	Report as null.
20	sampling_technique	Text(40)	If available	Sampling technique.

Table 4-2. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description
21	task_code	Text(20)	If available	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P#-MM-DD-YYY, where XX is the type of task required (PR = Pre Remedial, RI = Remedial Investigation, FS = Feasibility Study, PD = Pre-Design, RD = Remedial Design, RA = Remedial Construction, PC = Post Construction, RM = Removal Action, BD = Before Dredge, AD = After Dredge, BR = Brown Fields, SP = Special Project); P# is the phase; and MM-DD-YYYY is the date the sampling event started. For example, if sampling was performed over a three day period from 5-3-03 to 5-6-03 for a Phase 1 Post Construction site, the task_code would be PC-P1-05-03-03.
22	collection_quarter	Text(5)	Reserved for future use	Report as null.
23	composite_yn	Text(1)	Required	Is sample a composite sample? Enter "Y" for yes or "N" for no.
24	composite_desc	Text(255)	If available	Description of composite sample. If sample is not a composite, leave this field null.
25	sample_class	Text(10)	Reserved for future use	Report as null.
26	sys_well_code	Text(20)	Required*	Code used to differentiate between multiple wells installed at the same location. If only one well exists at a location, insert the same code as in the sys_loc_code field (field 10). For all soil and other samples not associated with a well, insert "None." *Field should be null if sample is not associated with a specific location, such as QC samples.
27	custom_field_2	Text(50)	Reserved for future use	Report as null.
28	custom_field_3	Text(50)	Reserved for future use	Report as null.
29	comment	Text(255)	If available	Any comments regarding the sample.

4.3 Chemistry Test/Results EDD Files

The Chemistry Test/Results (TRS, TRSQC, and BAT) EDD files contain data relating to analytical tests and results performed on samples. The three files associated with chemistry test/result data are the test/result (TRS) EDD file, the test/result data with quality control (QC) data (TRSQC) EDD file, and batch data (BAT) EDD file. The test/result file is a subset of the test/result with QC file and only one of the two files should be submitted. If the test/result data has accompanying quality control data then the test/result with QC (TRSQC) file should be submitted and not the test/result (TRS) file. If there is no quality control data accompanying the data, the test/result file (TRS) should be submitted and not the test/result with QC (TRSQC) file.

In most cases, data submitted to EPA by private sector consultants is expected to have already been validated by the data provider. This means that in nearly all these cases, the TRS EDD file will be the only file submitted. When private sector consultants are submitting chemistry EDDs to EPA, the TRSQC and/or the BAT files should be submitted only upon EPA request. In many cases, however, when data is submitted to EPA by EPA Region 5 contractors, the data have not yet been validated. In these cases, QC data will need to be submitted in the form of the TRSQC and BAT EDD files (Table 4-4 and Table 4-5). Examples of Test/Results files are provided in Figure 2-4 and Figure 2-5 of section 2.17.

4.3.1 Chemistry Test/Results without QC EDD File

The Chemistry Test/Results without QC (TRS) EDD file should be submitted when no QC data are being submitted. Each test/results EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TRS_v1.txt (or .csv)

Table 4-3. Chemistry test/result file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v1 file (Table 4-2) submitted in the current or previous EDD.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. For acceptable valid values, see Table A-16 in the Appendix. Default to "Unknown" if data is unavailable.
3	analysis_date	Date	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis.
4	analysis_time	Text(5)	Required	Beginning time of sample analysis in 24_hr (military) HH:MM format. Note that this field, combined with the "analysis_date" field, is used to distinguish between retests and reruns (if reported). Please ensure that retests have values in the "analysis_date" and/or "analysis_time" fields that differ from the original test event (Also, fill out the test_type field as needed).
5	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentrations, and "T" for every other case.
6	column_number	Text(2)	Reserved for future use	Report as null.

Table 4-3. Chemistry test/result file data structure

Pos#	Column Name	Data Type	Required	Description
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	lab_matrix_code	Text(3)	Required	Code that identifies the matrix, such as soil, groundwater, and sediment, being sampled. Acceptable valid values can be found in Table A-1 of the Appendix.. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g., leachates), so this field is available at both the sample and test level.
9	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for an analysis done at a fixed-based laboratory.
10	Basis	Text(3)	Required	Must be "Wet" for wet-weight basis reporting, "Dry" for dry-weight basis reporting, or "NA" for tests for which this distinction is not applicable. EPA prefers that results are reported on the basis of dry weight where applicable.
11	container_id	Text(30)	Reserved for future use	Report as null.
12	dilution_factor	Number w/decimal precision up to 7	Required	Effective test dilution factor.
13	prep_method	Text(35)	If available	Laboratory sample preparation method name or description. Must use valid value from Table A-14 in the Appendix.
14	prep_date	Date	If available	Beginning date of sample preparation in MM/DD/YYYY format.
15	prep_time	Text(5)	If available	Beginning time of sample preparation in 24_hr (military) HH:MM format.
16	leachate_method	Text(15)	Required if Leached	Laboratory leachate generation method name or description. The method name should be sufficient to reflect the operation methodology used by the laboratory (see analysis method discussion).
17	leachate_date	Date	Required if Leached	Beginning date of leachate preparation in MM/DD/YYYY format.
18	leachate_time	Text(5)	If available	Beginning time of leachate preparation in 24hr (military) HH:MM format.
19	lab_name_code	Text(20)	Required	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary. See Table A-17 in the Appendix for valid codes. [Note: If the lab you are using does not appear in Table A-17, you may propose a valid value for the lab for addition to the EPA Region 5 list. Please provide information about the lab in the cover letter accompanying your EDD submittal.]
20	qc_level	Text(6)	Required	May be either "screen" for screening data or "quant" For quantitative data. Default value is "quant."

Table 4-3. Chemistry test/result file data structure

Pos#	Column Name	Data Type	Required	Description
21	lab_sample_id	Text(20)	Required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).
22	percent_moisture	Text(5)	If available	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."
23	subsample_amount	Text(14)	If available	Amount of sample used for test.
24	subsample_amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid value from Table A-18 in the Appendix.
25	analyst_name	Text(30)	Reserved for future use	Report as null.
26	instrument_id	Text(50)	Reserved for future use	Report as null.
27	comment	Text(255)	If available	Comments about the test as necessary.
28	preservative	Text(50)	If available	Sample preservative used.
29	final_volume	Text(15)	If available	The final volume of the sample after sample preparation. Include all dilution factors.
30	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final amount.
31	cas_rn	Text(15)	Required	Analyte code. See Table A-15 in the Appendix for acceptable valid values.
32	chemical_name	Text(75)	Required	Chemical name. Use the appropriate name from Table A-15 in the Appendix.
33	result_value	Text(20)	Required *	Analytical result reported at an appropriate number of significant digits. * Required if detect_flag = "Y" and result_type_code is "TRG" or "TIC"
34	result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.
35	result_type_code	Text(3)	Required	Must be either "TRG" for a target or regular result, "TIC" for a tentatively identified compound.
36	reportable_result	Text(3)	Required	Must be either "Yes" for results that are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable).

Table 4-3. Chemistry test/result file data structure

Pos#	Column Name	Data Type	Required	Description
37	detect_flag	Text(1)	Required	Maybe either "Y" for detected analytes or "N" for non-detects. "Y" should be used for detected target compounds and TICs only (i.e. result_type_code is "TRG" or "TIC"). Also use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non-detects.
38	lab_qualifiers	Text(2)	If available	Qualifier flags assigned by the laboratory. For acceptable valid values see Table A-10 in the Appendix.
39	validator_qualifiers	Text(2)	If available	Qualifier flags assigned by the person who validates the laboratory data. For acceptable valid values see Table A-10 in the Appendix.
40	organic_yn	Text(1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents.
41	method_detection_limit	Text(20)	If available	Report as null. The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure.
42	reporting_detection_limit	Text(20)	Required if detect_flag = N	Must be reported if sample result is "non-detect." The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure, which is equal to or greater than the MDL.
43	quantitation_limit	Text(20)	If available	Concentration level above which results can be quantified with confidence. The value must reflect conditions such as dilution factors and moisture content, and must be sample-specific.
44	result_unit	Text(15)	Required if result_value is NOT null	Units of measurement for the result. Must use valid values from Table A-18 in the Appendix.
45	detection_limit_unit	Text(15)	Required if detect_flag = N	Units of measurement for the detection limit(s). Must use valid value from Table A-18 in the Appendix.
46	tic_retention_time	Text(5)	Reserved for future use	Report as null.
47	result_comment	Text(255)	If available	Result specific comments.

4.3.2 Chemistry Test/Result with QC Data EDD File

The Chemistry test/results with QC (TRSQC) EDD file contains data from analytical tests performed on samples along with quality control data. The first 47 columns of this EDD file are identical to the 47 columns found in the TRS EDD file (Section 4.3.1). In addition to these fields, however, the TRSQC EDD file includes fields for QC data. For the most part, the TRSQC EDD file will only need to be submitted by EPA contractors that are submitting quality data elements with their reports.

Each Chemistry test/results with QC EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TRSQC_v1.txt (or .csv)

Table 4-4. Chemistry test/results with QC data file structure

Pos#	Column Name	Data Type	Required	Description
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v1 file (Table 4-2) submitted in the current or previous EDD.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. For acceptable valid values, see Table A-16 in the Appendix. Default to "Unknown" if data is unavailable.
3	analysis_date	Date	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis.
4	analysis_time	Text(5)	Required	Beginning time of sample analysis in 24_hr (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between retests and reruns (if reported). Please ensure that retests have "analysis_date" and/or "analysis_time" differ from the original test event (and fill out the test_type field as needed).
5	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentration, or "T" for everything else
6	column_number	Text(2)	Reserved for future use	Report as null.
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	lab_matrix_code	Text(3)	Required	Code that identifies the matrix, such as soil, groundwater, and sediment. Acceptable valid values can be found in Table A-1 of the Appendix.. The matrix of the sample when it is analyzed may be different from the matrix of the sample when it is collected (e.g. leachates), so this field is available at both the sample and test level.
9	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for an analysis done at a fixed-based laboratory.

Table 4-4. Chemistry test/results with QC data file structure

Pos#	Column Name	Data Type	Required	Description
10	Basis	Text(3)	Required	Must be either "Wet" for wet-weight basis reporting, "Dry" for dry-weight basis reporting, or "NA" for tests for which this distinction is not applicable. EPA prefers that results are reported on the basis of dry weight where applicable.
11	container_id	Text(30)	Reserved for future use	Report as null.
12	dilution_factor	Number w/decimal precision up to 7	Required	Effective test dilution factor.
13	prep_method	Text(35)	If available	Laboratory sample preparation method name or description. Must use valid value from Table A-14 in the Appendix.
14	prep_date	Date	If available	Beginning date of sample preparation in MM/DD/YYYY format.
15	prep_time	Text(5)	If available	Beginning time of sample preparation in 24_hr (military) HH:MM format.
16	leachate_method	Text(15)	Required if leached	Laboratory leachate generation method name or description. The method name should be sufficient to reflect the operation methodology used by the laboratory (see analysis method discussion).
17	leachate_date	Date	Required if leached	Beginning date of leachate preparation in MM/DD/YYYY format.
18	leachate_time	Text(5)	If available	Beginning time of leachate preparation in 24_hr (military) HH:MM format.
19	lab_name_code	Text(20)	Required	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary; see Table A-17 in the Appendix for valid codes.
20	qc_level	Text(6)	Required	May be either "screen" for screening data or "quant" For quantitative data. Default value is "quant."
21	lab_sample_id	Text(20)	Required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).
22	percent_moisture	Text(5)	If available	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."
23	subsample_amount	Text(14)	If available	Amount of sample used for test.
24	subsample_amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid value from Table A-18 in the Appendix.
25	analyst_name	Text(30)	Reserved for future use	Report as null.
26	instrument_id	Text(50)	Reserved for future use	Report as null.
27	Comment	Text(255)	If available	Comments about the test, if necessary.
28	Preservative	Text(50)	If available	Sample preservative used.

Table 4-4. Chemistry test/results with QC data file structure

Pos#	Column Name	Data Type	Required	Description
29	final_volume	Text(15)	If available	The final volume of the sample after sample preparation. Include all dilution factors.
30	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final amount.
31	cas_rn	Text(15)	Required	Analyte code. See Table A-15 in the Appendix for acceptable valid values.
32	chemical_name	Text(75)	Required	Chemical name. Use the appropriate name from Table A-15 in the Appendix.
33	Result_value	Text(20)	Required *	Analytical result reported at an appropriate number of significant digits. May be blank for non-detect results. * Required if detect_flag = "Y" and result_type_code is "TRG" or "TIC".
34	Result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.
35	Result_type_code	Text(3)	Required	Must be either "TRG" for a target or regular result, "TIC" for a tentatively identified compound, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.
36	reportable_result	Text(3)	Required	Must be either "Yes" for results that are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory.
37	detect_flag	Text(1)	Required	Maybe either "Y" for detected analytes or "N" for non-detects. "Y" should be used for detected target compounds and TICs only (i.e. result_type_code is "TRG" or "TIC"). Also use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non-detects.
38	Lab_qualifiers	Text(2)	If available	Qualifier flags assigned by the laboratory. For acceptable valid values see Table A-10 in the Appendix.
39	validator_qualifiers	Text(7)	If available	Qualifier flags assigned by the person who validates the laboratory data. For acceptable valid values see Table A-10 in the Appendix.
40	organic_yn	Text(1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents.
41	method_detection_limit	Text(20)	If available	Report as null. The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure.

Table 4-4. Chemistry test/results with QC data file structure

Pos#	Column Name	Data Type	Required	Description
42	reporting_detection_limit	Text(20)	Required if detect_flag = N	Must be reported if sample result is "non-detect." The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure, which is equal to or greater than the MDL.
43	quantitation_limit	Text(20)	If available	Concentration level above which results can be quantified with confidence. The value must reflect conditions such as dilution factors and moisture content, and must be sample specific.
44	Result_unit	Text(15)	Required if result_value is NOT null	Units of measurement for the result. Must use valid values from Table A-18 in the Appendix.
45	detection_limit_unit	Text(15)	Required if detect_flag = N	Units of measurement for the detection limit(s). Must use valid value from Table A-18 in the Appendix.
46	tic_retention_time	Text(5)	Reserved for future use	Report as null.
47	Result_comment	Text(255)	If available	Result specific comments.
48	qc_original_conc	Text(14)	If applicable	The concentration of the analyte in the original (unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).
49	qc_spike_added	Text(14)	If applicable	The concentration of the analyte added to the original sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).
50	qc_spike_measured	Text(14)	If applicable	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).
51	qc_spike_recovery	Text(14)	If applicable	The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").
52	qc_dup_original_conc	Text(14)	If applicable	The concentration of the analyte in the original (unspiked) sample. Might be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).

Table 4-4. Chemistry test/results with QC data file structure

Pos#	Column Name	Data Type	Required	Description
53	qc_dup_spike_added	Text(14)	If applicable	The concentration of the analyte added to the original sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs). Use zero for spiked compounds that were not detected in the sample. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Also complete the qc_spike-added field.
54	qc_dup_spike_measured	Text(14)	If applicable	The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample (depending on user needs). Also complete the qc_spike_measured field.
55	qc_dup_spike_recovery	Text(14)	If applicable	The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Also complete the qc_spike_recovery field. Report as percentage multiplied by 100 (e.g., report "120%" as "120").
56	qc_rpd	Text(8)	If applicable	The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report "30%" as "30").
57	qc_spike_lcl	Text(8)	If applicable	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60").
58	qc_spike_ucl	Text(8)	If applicable	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").
59	qc_rpd_cl	Text(8)	If applicable	Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report "25%" as "25").
60	qc_spike_status	Text(1)	If applicable	Used to indicate whether the spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample.
61	qc_dup_spike_status	Text(1)	If applicable	Used to indicate whether the duplicate spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample.
62	qc_rpd_status	Text(1)	If applicable	Used to indicate whether the relative percent difference was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any duplicated sample.

4.3.3 Chemistry Batch Data EDD File

The Chemistry Batch (BAT) EDD file contains data that relate the individual samples to the laboratory batch identifier. For the most part, as with the TRSQC EDD file, the BAT EDD file will only need to be submitted by EPA contractors that are submitting quality data elements with their reports. The purpose of this EDD file is so laboratory quality control samples can be associated with the correct field samples with which they were processed and analyzed. This EDD file has been structured to allow samples to have different batch IDs for various phases of analysis (e.g., preparation phase, analysis phase). The majority of samples will only have one batch ID assigned by the laboratory. It is important that the values in the sys_sample_code, lab_anl_method_name, analysis_date, analysis_time, total_or_dissolved and test_type fields match those found in the TRS or TRSQC EDD files. Each Chemistry batch file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5BAT_v1.txt (or .csv)

Table 4-5. Chemistry batch file data structure

Pos#	Column Name	Data type	Required	Description
1	sys_sample_code	Text(40)	Required	Sample identifier of the sample that was tested and analyzed. Must match one of the reported values in the sys_sample_code field of the EPAR5SMP_v1 file (Table 4-2) submitted in the current or previous EDD.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. For acceptable valid values, see Table A-16 in the Appendix. Default to "Unknown" if data is unavailable.
3	analysis_date	Date	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis.
4	analysis_time	Text(5)	Required	Beginning time of sample analysis in 24_hr (military) HH:MM format.
5	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentration; should be "T" for everything else
6	column_number	Text(2)	Reserved for future use	Report as null.
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	test_batch_type	Text(8)	Required	Lab batch type. Valid values include "Prep," "Analysis," and "Leach." This is a required field for all batches.
9	test_batch_id	Text(20)	Required	Unique identifier for all lab batches.

4.4 Water Level

The Water Level (GWTR) EDD file contains information on water levels measured during sampling activities. Groundwater levels and surface water elevations should be reported using this file; however, in most cases, the file will be used to report groundwater levels. When surface water samples are collected, however, this EDD file should be used to record water surface elevations at the time the samples were collected. Surface water elevations reported in this file will be used as the reference elevation for surface water sample depths (i.e., start_depth, field 11, and end_depth, field 12 in the Chemistry Sample (SMP) EDD file. See Table 4-2). When using the GWTR EDD file for reporting surface water data, only the first six fields (fields 1 through 6) and the “remark” field (field 17) should be populated. All fields in the GWTR EDD file, however, should be populated for groundwater elevation data (if data is available). An example of a Water Level file is provided in Figure 2-4, section 2.17. Each water level file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5GWTR_v1.txt (or .csv)

Table 4-6. Water Level file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Water level measurement location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells installed at the same location. Must be a valid code for the facility and must match one of the reported values in the sys_well_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
3	Measurement_date	Date	Required	Date of water level measurement in MM/DD/YYYY format. If exact date is not known, enter the best estimate for the date of sampling. If an estimated date is entered, note this and provide an explanation for how the estimate was made in both the EDD cover letter and in the comment field in this file (field 10).
4	Measurement_time	Text(5)	Required	Time of water level measurement in 24_hr (military) HH:MM format. Default to 00:00 if unknown.
5	historical_reference_elev	Number w/decimal precision up to 15	Required	For groundwater samples, the value in this field should be the elevation, in feet above mean sea level, of the reference point used to take measurements of the water level depth. Typically the reference point for groundwater measurements is the top of the well casing. For surface water samples, the value in this field should be the elevation of the surface water in feet above mean sea level. If elevation is given in units other than feet above mean sea level, please indicate the unit used in the remarks field (field 17).

Table 4-6. Water Level file data structure

Pos#	Column Name	Data Type	Required	Description
6	water_level_depth	Number w/decimal precision up to 7	Required	For groundwater, the value in this field should be the depth of ground water below the elevation defined in historical_reference_elev field (field 5). For surface water, the value in this field should be the default value of "0"
7	water_level_elev	Number w/decimal precision up to 7	If available	Elevation of water level. Elevation must be in feet.
8	corrected_depth	Number w/decimal precision up to 7	If available	Depth of water level after any necessary corrections, e.g., if free product was encountered.
9	corrected_elevation	Number w/decimal precision up to 7	If available	Corrected water level elevation that corresponds to the corrected depth. Elevation must be in feet.
10	measured_depth_of_well	Number w/decimal precision up to 7	If available	The depth below ground surface to the bottom of the well.
11	depth_unit	Text (15)	If available	Unit used for depth measurements. See Table A-18 in the Appendix for appropriate values.
12	Technician	Text (30)	If available	Name of technician measuring water level
13	dry_indicator_yn	Text (1)	If available	This field is used to indicate whether or not a well is dry -- "Y" for yes or "N" for no.
14	measurement_method	Text (20)	If available	Method used to make water level measurements.
15	batch_number	Text (10)	If available	Batch number of group of measurements.
16	dip_or_elevation	Text (10)	If available	Use either "elevation" or "dip." Use "elevation" if water level measurement is above the datum (i.e., artesian well) or "dip" if water level is below datum.
17	Remark	Text (255)	If available	Any necessary remarks related to groundwater or surface water information provided in this EDD file.

4.5 Extraction – Injection Well EDD File

The Extraction-Injection Well (EIW) EDD file should be submitted on a regular (e.g., quarterly) basis for all sites where extraction and/or injection wells are a part of the remedial action at the site. The purpose of the EIW EDD file is to provide EPA Region 5 with designed pumping rates as well as the actual pumping rates for each well during a particular reporting period. This information will be useful for determining if the remedial system is successfully capturing the contaminant plume. An example of a Extraction-Injection Well file is provided in Figure 2-4, section 2.17. Each Extraction-Injection Well EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5EIW_v1.txt (or .csv)

Table 4-7. Extraction-Injection Well file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells installed at the same location. Must be a valid code for the facility and must match one of the reported values in the sys_well_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
3	start_measure_date	Date	Required	Date that the pumping rate measurements began in MM/DD/YYYY format.
4	start_measure_time	Text(5)	Required	Time that the pumping rate measurements began in 24_hr (military) HH:MM format
5	end_measure_date	Date	Required	Date that the pumping rate measurements concluded in MM/DD/YYYY format.
6	end_measure_time	Text(5)	If available	Time that the pumping rate measurements concluded in 24_hr (military) HH:MM format
7	avg_pump_rate	Number w/decimal precision up to 15	Required	Average pumping rate. Recommended method is to use volume pumped divided by the reported date span, i.e., from the (start_measurement_date to end_measurement_date)
8	pump_rate_unit	Text(15)	Required	Unit of measure for the pumping rate. Use values from Table A-18 in the Appendix.
9	pct_operating_time	Text(3)	If Available	Percentage of the measurement time interval during which the well was operating. Use a value from 0 to 100 (do not include the percent symbol, "%").
10	operating_mode	Text(13)	Required	Mode in which well was operating during the reported interval. Select from the following valid values: EXTRACTION, INJECTION, RECIRCULATION, PULSE, DEVEL, UNUSE.
11	design_rate	Text(14)	Required	Pumping rate as specified in the approved remedial design report for fully capturing site groundwater contamination.

Table 4-7. Extraction-Injection Well file data structure

Pos#	Column Name	Data Type	Required	Description
12	design_rate_unit	Text(14)	Required	Unit of measure for the design pumping rate. Use values from Table A-18 in the Appendix.
13	rate_measurement_type	Text(9)	If available	Type of measurements used for averaging. Select from the following valid values: TOTALIZER (totalizing flow meter), MANIFOLD (estimated from total manifold flow), ESTIMATE (estimate from prior values), AVERAGE (average of instantaneous measurements).
14	suction	Text(14)	If available	Vacuum in well (e.g., wellpoint vacuum) or well casing (e.g., vacuum well), reported in equivalent feet of water.
15	remark	Text(255)	If available	Remarks regarding the pumping rate measurements.

5. FORMATS FOR GEOLOGY FILES

This section contains tables that define the file structures for the Geology EDD. The file structures include drilling activity, lithology, well, well construction, geology samples, water level, water table, and down hole point data. The columns marked “Required” must be reported for each row in the file. If an EDD is submitted with one or more “Required” fields not filled in, EPA will not be able to load the EDD into its database, and the EDD will have to be returned to the data provider for correction(s). The columns marked “If available” should also be reported whenever possible. Examples of the EDD files that make up the Geology EDDs are provided in Figure 2-6, section 2.17.

5.1 Drill Activity EDD File

The drill activity (DRA) EDD file contains general information pertaining to the drilling activities resulting from the soil boring. Each drill activity file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5DRA_v1.txt (or .csv)

Table 5-1. Drill activity file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	drill_event	Text (20)	Required	Used to identify drilling event. Examples of drilling events could be “initial” for initial drilling or “second” for a subsequent drilling at the same sys_loc_code.
3	start_depth	Number w/decimal precision up to 7	If available	The start depth, in feet below ground surface, of the drilling.
4	end_depth	Number w/decimal precision up to 7	If available	End depth, in feet below ground surface of the drilling.
5	start_date	Date	If available	Date drilling began in MM/DD/YYYY format.
6	Diameter	Number w/decimal precision up to 7	If available	Diameter of boring.
7	diameter_unit	Text (15)	If available	Unit corresponding to measured diameter. See Table A-18 in the Appendix for appropriate value.
8	drill_method	Text (50)	If available	Method used to drill boring.
9	fluid	Text (50)	If available	Description of fluid used during drilling.

Table 5-1. Drill activity file data structure (continued)

Pos#	Column Name	Data Type	Required	Description
10	viscosity	Text (50)	If available	Viscosity of drilling fluid.
11	hammer_wt	Text (50)	If available	Weight of hammer, in pounds, used for sampling.
12	hammer_fall	Text (50)	If available	Distance of hammer fall during sampling in inches.
13	lift_mechanism	Text (50)	If available	Type of mechanism used to lift hammer.
14	new_yn	Text (1)	If available	This field is to indicate whether this is a new boring. Enter “Y” for yes or “N” for no.
15	repair_yn	Text (1)	If available	Is this drilling event to repair an existing boring? “Y” for yes or “N” for no.
16	deepen_yn	Text (1)	If available	Is this drilling event to deepen an existing boring? “Y” for yes or “N” for no.
17	abandon_yn	Text (1)	If available	Has the boring been abandoned? “Y” for yes or “N” for no.
18	replace_yn	Text (1)	If available	Is this boring event to replace an existing boring? “Y” for yes or “N” for no.
19	public_yn	Text (1)	If available	Is well being install for a public use? “Y” for yes or “N” for no.
20	Purpose	Text (70)	If available	Describe the purpose of the boring event.

5.2 Lithology EDD File

The lithology (LTH) EDD file contains all the lithology data for soil borings. For each lithologic unit, 16 fields are available for populating with data about the boring. Optional comments can be recorded in the remark1 and remark2 fields to describe depth-specific observations within a lithologic unit. Each lithology EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5LTH_v1.txt (or .csv)

Table 5-2. Lithology file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	start_depth	Number w/decimal precision up to 15	Required	The start depth, in feet below ground surface, of the lithologic unit.
3	material_type	Text(40)	Required if geo_unit null	The type of material that composes the lithologic unit. See Table A-19 in the Appendix for appropriate values.
4	geo_unit_code_1	Text(20)	If available	The data provider's interpretation of the hydrogeologic unit present at this lithologic unit, e.g., aquifer 1, aquitard 1, aquifer 2, upper clay unit. See Figure A-2 in the Appendix for examples.
5	geo_unit_code_2	Text(20)	If available	Alternate geologic unit grouping. This can be a sub-classification of geologic_unit_code_1 or a layer used for groundwater flow/transport computer modeling that contains the lithologic unit. See Figure A-2 in the Appendix for examples.
6	remark_1	Text(255)	if applicable	Comments (if any) on the lithologic unit.
7	remark_2	Text(255)	if applicable	Additional comments on the lithologic unit.
8	Moisture	Text(1)	If available	Was any moisture detected within the lithologic unit? "Y" for yes or "N" for no.
9	Permeable	Text(20)	If available	Description of the permeability of the lithologic unit such as "impervious," "semi," "pervious," or "very."
10	consolidated_yn	Text(1)	If available	Was lithologic unit consolidated? "Y" for yes or "N" for no.
11	Color	Text(20)	If available	Color of the lithologic unit.
12	Observation	Text(255)	If available	General field observations of the lithologic unit.
13	Consistency	Text(20)	If available	Description of the consistency of the soil, such as "very soft," "soft," "firm," "hard" or "very hard."
14	Sorting	Text(20)	If available	Geologic description of the grain size distribution of the lithologic unit. Use "poor" for soil with a wide range of particle sizes or "well" for soil with a narrow range of particle sizes.
15	Grainsize	Text(20)	If available	Description of grain size.
16	Odor	Text(20)	If available	Description of odor from the soil.

5.3 Well EDD File

The well (WEL) EDD file contains general information relating to well installation. Each well file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5WEL_v1.txt (or .csv)

Table 5-3. Well file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Well installation location Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells installed at the same location. Must be a valid code for the facility and must match one of the reported values in the sys_well_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
3	well_description	Text(30)	If applicable	Used for additional well description if necessary.
4	well_owner	Text(30)	If available	Name of entity that owns the well.
5	well_purpose	Text (20)	If available	Purpose of well.
6	well_status	Text (20)	If available	Current status of well.
7	top_casing_elev	Number w/decimal precision up to 15	If available	Elevation of the top of well casing. Elevation must be in feet.
8	datum_value	Number w/decimal precision up to 15	Required	Elevation of datum used to reference measurement of water level depths. (EPA normally uses top of well casing for datum.)
9	datum_unit	Text(15)	Required	Unit of measure for the well datum. See Table A-18 in the Appendix for appropriate values.
10	datum_desc	Text (70)	Required	Description of the datum, such as "top of well casing."
11	step_or_linear	Text (6)	If available	Use only for re-surveys of well elevations. If a section of the well casing was removed or added use "step" as the value. If nothing was added or removed from the last survey, use "linear" as the value.
12	start_date	Date	Required	Date that datum was first used to take measurements in MM/DD/YYYY format.
13	datum_collect_method_code	Text (2)	If available	Method used to determine the datum elevation. Use codes from Table A-6 in the Appendix
14	depth_of_well	Number w/decimal precision up to 15	If available	Depth below ground surface of the well bottom.
15	depth_unit	Text (15)	If available	Unit of measurement for depth. Use values from Table A-18 in the Appendix.
16	depth_measure_method	Text (20)	If available	Method of measuring depth of well.
17	stickup_height	Text (8)	If available	Height of casing above ground surface.
18	stickup_unit	Text (15)	If available	Unit of measure for the stickup height. Use values from Table A-18 in the Appendix.

Table 5-3. Well file data structure

Pos#	Column Name	Data Type	Required	Description
19	sump_length	Text (20)	If available	Length of sump.
20	sump_unit	Text (15)	If available	Unit of measure for the sump length. Use values from Table A-18 in the Appendix.
21	Installation_date	Date	If available	Date of well installation in MM/DD/YYYY format.
22	construct_start_date	Date	If available	Date well construction began in MM/DD/YYYY format.
23	construct_complete_date	Date	If available	Date well construction was completed in MM/DD/YYYY format.
24	construct_contractor	Text (20)	If available	Name of contractor that installed well.
25	pump_type	Text (20)	If available	Type of pump used at well such as centrifugal, propeller, jet, helical, rotary, etc.
26	pump_capacity	Text (6)	If available	Capacity of pump.
27	pump_unit	Text (15)	If available	Unit of measure for the pump capacity and yield. Use values from Table A-18 of the Appendix.
28	pump_yield	Text (6)	If available	The yield of the pump.
29	pump_yield_method	Text (20)	If available	Method used for pump yield.
30	weep_hole	Text (1)	If available	Is there a weep hole? "Y" for yes or "N" for no.
31	head_configuration	Text (50)	If available	Description of the well-head.
32	access_port_yn	Text (1)	If available	Is there an access port? "Y" for yes or "N" for no.
33	casing_joint_type	Text (50)	If available	Type of casing joint, such as "threaded," "flush," or "solvent-welded."
34	Perforator_used	Text (50)	If available	Description of well perforation, such as "slotted," "drilled," or "wound."
35	intake_depth	Number w/decimal precision up to 15	If available	Depth in feet below ground surface of the well intake.
36	Disinfected_yn	Text (1)	If available	Was well disinfected? "Y" for yes or "N" for no.
37	historical_reference_elev	Number w/decimal precision up to 15	Reserved for future use	Leave null .
38	geologic_unit_code	Text (20)	If available	Geologic unit in which the well intake is installed.
39	Remark	Text (255)	If available	Available for general remarks.

5.4 Well Construction EDD File

The well construction (WSG) file contains information relating to well construction and well segments. Information is required for all well segments within each well, including surface plug, protective casing, well casing, annular backfill, annular seal, screen, and filter pack. In order to obtain the depth of groundwater samples, it is particularly important that the depths of the top and bottom of the well screen be submitted for each well. Each well construction EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5WSG_v1.txt (or .csv)

Table 5-4. Well construction file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells installed at the same location. Must be a valid code for the facility and must match one of the reported values in the sys_well_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
3	segment_type	Text(20)	Required	Type of segment within well (e.g., protective casing, well casing, screen, etc.). Use values from Table A-20 in the Appendix.
4	material_type_code	Text(20)	Required	Material description of well segment. Use values from Table A-20 in the Appendix.
5	start_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the top of the described segment.
6	end_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the bottom of the described segment.
7	depth_unit	Text(15)	Required	The unit of depth measurements. Use values from Table A-18 in the Appendix.
8	inner_diameter	Number w/decimal precision up to 15	If available	The inside diameter of the described segment.
9	outer_diameter	Number w/decimal precision up to 15	If available	The outside diameter of the described segment.
10	diameter_unit	Text(15)	If available	The unit of diameter measurements. Use values from Table A-18 in the Appendix.
11	Thickness	Number w/decimal precision up to 15	If available	Thickness of the described well segment.

Table 5-4. Well construction file data structure

Pos#	Column Name	Data Type	Required	Description
12	thickness_unit	Text(15)	If available	The unit of measurement for thickness. Use values from Table A-18 in the Appendix
13	slot_type	Text(20)	if applicable	Type of slots in screen segment such as bridge, shutter, and continuous.
14	slot_size	Number w/decimal precision up to 15	if applicable	Width of slots.
15	slot_size_unit	Text(15)	if applicable	The unit of measurement for slot size. Use values from Table A-18 in the Appendix.
16	perf_length	Number w/decimal precision up to 15	if applicable	Length of perforated portion of screen in feet.
17	screen_type	Text(15)	if applicable	Type of screen.
18	material_quantity	Text(20)	If available	Quantity of material used in pounds. Applicable to annular seal/fill material.
19	material_density	Text(20)	If available	Density of the annular seal material in lbs/ft ³ .
20	Remark	Text(255)	If available	Remarks regarding the segment.

5.5 Geology Samples EDD File

The Geology Samples (GSMP) EDD file contains geotechnical sample information. (Samples results related to chemical analyses should be reported using the Chemistry EDD.) Each Geology sample EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5GSMP_v1.txt (or .csv)

Table 5-5. Geology samples file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	geo_sample_code	Text(40)	Required	Unique sample identifier. Considerable flexibility is given in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced.
3	sample_name	Text(50)	If available	Use to provide a name or description of sample. Does not have to be a unique throughout database.
4	sample_top	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to top of sample.
5	sample_bottom	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to bottom of sample.
6	sampling_date	Date	If available	Date sample was collected in MM/DD/YYYY format.
7	sampling_time	Text(5)	If available	Time sample was collected in 24_hr (military) HH:MM format. Default to 00:00 if unknown.
8	sample_method	Text(30)	If available	Method used to obtain sample, e.g., split spoon or Shelby tube.
9	material_type	Text(40)	If available	Material type of geologic sample. Use values from Table A-19 in the Appendix.
10	sample_desc	Text(255)	If available	General description of the sample or sampling activities.
11	geologic_unit_code	Text(20)	If available	Code used to identify the geologic unit of the sample.
12	liquid_limit	Number w/decimal precision up to 7	If available	Liquid limit (LL) of the sample.
13	plastic_limit	Number w/decimal precision up to 7	If available	Plastic Limit (PL) of the sample.
14	shrinkage_limit	Number w/decimal precision up to 7	If available	Shrinkage limit of the sample.

Table 5-5. Geology samples file data structure

Pos#	Column Name	Data Type	Required	Description
15	flow_index	Number w/decimal precision up to 7	If available	Flow index of the sample.
16	plasticity_index	Number w/decimal precision up to 7	If available	Plasticity index of the sample.
17	Activity	Number w/decimal precision up to 7	If available	Activity of the sample.
18	E	Number w/decimal precision up to 7	If available	Void ratio of the sample.
19	e_max	Number w/decimal precision up to 7	If available	Maximum void ratio of the sample.
20	e_min	Number w/decimal precision up to 7	If available	Minimum void ratio of the sample.
21	N	Number w/decimal precision up to 7	If available	Porosity of the sample.
22	specific_gravity	Number w/decimal precision up to 7	If available	Specific gravity of the sample.
23	W	Number w/decimal precision up to 7	If available	Water content of the sample.
24	opt_w	Number w/decimal precision up to 7	If available	Optimum water content.
25	S	Number w/decimal precision up to 7	If available	Degree of saturation of the sample.
26	K	Number w/decimal precision up to 7	If available	Hydraulic conductivity of the sample.
27	K_unit	Text(15)	If available	Unit of measure for K. Use values from Table A-18 of the Appendix.
28	unit_wt	Number w/decimal precision up to 7	If available	Unit weight of the sample.
29	sat_unit_wt	Number w/decimal precision up to 7	If available	Saturated unit weight of the sample.
30	dry_unit_wt	Number w/decimal precision up to 7	If available	Dry unit weight of the sample.
31	dry_unit_wt_max	Number w/decimal precision up to 7	If available	Maximum dry unit weight of the sample.

Table 5-5. Geology samples file data structure

Pos#	Column Name	Data Type	Required	Description
32	dry_unit_wt_min	Number w/decimal precision up to 7	If available	Minimum dry unit weight of the sample.
33	density_unit	Text(15)	If available	Unit of measure for the densities of the sample. Use values from Table A-18 in the Appendix.
34	rel_density	Number w/decimal precision up to 7	If available	Relative density of the sample.
35	rel_compaction	Number w/decimal precision up to 7	If available	Relative compaction of the sample.
36	Consistency	Text (20)	If available	Description of the consistency of the soil sample such as very soft, soft, firm, hard or very hard.
37	organic_carbon	Number w/decimal precision up to 7	If available	Organic carbon content of sample.
38	organic_carbon_unit	Text (15)	If available	Unit of measurement of organic content. Use values from Table A-18 of the Appendix.

5.6 Water Table EDD Files

The water table (TBL) EDD file stores data pertaining the water table and is used to record groundwater data during drilling activities. Each water table EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TBL_v1.txt (or .csv)

Table 5-6. Water table file data structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	Type	Text (20)	Required	Aquifer designation, such as unconfined1, confined1, or confined2.
3	Sequence	Text (12)	Required	Designation of when water level measurement was taken. Use “unstabilized” if measurement was taken before water stabilized and use “stabilized” if measurement taken after stabilization.
4	Depth	Number w/decimal precision up to 15	Required	Depth of water table, in feet, below reference point.
5	flowing_yn	Text (1)	If available	Is the water table flowing? “Y” for yes or “N” for no.
6	measurement_method	Text (50)	If available	Method of measuring water table depth.
7	capped_pressure	Number w/decimal precision up to 15	If available	Hydrostatic pressure of confined aquifer.
8	capped_pressure_unit	Text (15)	If available	Unit of measure for capped pressure. Use values from Table A-18 in the Appendix.
9	reference_point	Text (50)	If available	Description of reference point from which depth measurements were taken.
10	reference_elevation	Number w/decimal precision up to 15	Required	Elevation of the reference point from which depth measurement were taken. Elevation must be in feet.
11	Temperature	Number w/decimal precision up to 15	If available	Temperature of water in the water table.
12	temperature_unit	Text (15)	If available	Unit of temperature. Use values from Table A-18 in the Appendix.

5.7 Geology Down Hole Point Data EDD File

The Geology down hole point data (DHP) EDD file stores data from down hole logging methods such as Cone Penetrometer Tests and geophysics. All down hole logging data should be submitted electronically. Report the parameter being measured in the “param” field, such as resistivity, and report the measured value at the depth of the measurement. Table 5-8 presents the DHP EDD file structure. Each Geology down hole point data EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5DHP_v1.txt (or .csv)

Table 5-8. Geology Down Hole Point File Data Structure

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text20	Required	Sample collection location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.
2	Depth	Number w/decimal precision up to 15	Required	Depth of measurement below ground surface in feet.
3	Param	Text(20)	Required	The parameter being measured, such as tip stress, resistivity, or pore pressure.
4	param_value	Number w/decimal precision up to 15	Required	The measured value of the parameter.

Table 5-9. Example of down hole point data file

Sys_loc_code	Depth	Param	Param_Value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8
MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	889

6. TECHNICAL SUPPORT

EPA Region 5 provides technical support for users of this EDD Specification Manual. For questions concerning data, data formats, and EDD submittal procedures, please contact GEOS Technical Support listed below. For more general questions relating to the site, please contact the EPA RPM assigned to the site.

GEOS Technical Support: (312) 353-1200, or GeosEDDSupport@epa.gov